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Mariners Weather Log

DEPARTMENT OF COMMERCE • UNITED STATES OF AMERICA

National Oceanic and Atmospheric Administration • Environmental Data and Information Service • National Oceanographic Data Center

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Mariners Weather Log

Editor: Elwyn E. Wilson

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Front Cover: The PRIDE OF BALTIMORE will be one of the prime attractions at the NOAA SERVES week which will take place at the Baltimore Harbor October 23 through 31. NOAA will be demonstrating many of the services it provides to the nation. Photo Courtesy of Pride of Baltimore, Inc.

Routing
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The Secretary of Commerce has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Department. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget through April 1,1985.

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PRIDE OF BALTIMORE

The PRIDE OF BALTIMORE is an authenic Baltimore Clipper built by the city to commemorate its maritime heritage. An international team of artisans -- blacksmiths, carpenters, and sail-makers -- used early 18th century tools and techniques to build the graceful 90-foot topsail schooner, She was commissioned on May 1, 1977, the first Baltimore Clipper to be built in over a century.

The national Weather Service recently equipped the PRIDE to serve as an official weather observer during a 17,000 mi voyage to the Pacific Northwest this fall. She is fully equipped as a selected class observing ship. The ship does not have CW radio and the U.S. Coast Guard has agreed to test a new system for receiving synoptic weather reports in alphanumeric form over voice single sideband radio. Crew training will be completed by October 31, when the PRIDE will sail to the Caribbean, through the Panama Canal, and up the Central and North American west coasts and return. Her crew will take and transmit valuable daily weather observations from coastal waters, surprisingly a data sparse area. Merchant ships in the Cooperative Ship Observing Program often stop taking and transmitting weather observations when within 100 mi of the coast because of navigational requirements; yet many storms originate or intensify in coastal areas.

From the American Revolution until about 1850,

Jerry Nickerson, NWS, explaining the forms and instruments to the crew.

PRIDE OF BALTIMORE under sail. Photo by Armin E. Elsaesser, III.

the sleek Baltimore Clippers played a valiant role in the nation's maritime history, serving as privateers, merchant ships, and revenue cutters. When pirates or foreign navies preyed on American merchant vessels, ship owners turned to the small, swift clippers to get their cargoes through. During the War of 1812, the clippers ran vital cargo through the British blockades and, as privateers, captured British shipping under the guns of heavily-armed, but comparatively clumsy men-of-war.

Thomas Boyle was perhaps the most daring and romatic clipper captain. During the War of 1812, he outfitted the CHASSEUR with additional cannon, spars, and canvas and with a crew of 150 men successfully carried the war to the English coastline. Declaring his own blockade Boyle harrassed British shipping so successfully the English merchants were forced to sail in convoys.

With peace and the need for greater cargo capacity the Baltimore Clippers gradually disappeared. Their design, however, was basic to the development of the great China Clippers of the 1840's and the California Clippers of the 1850's.

The PRIDE OF BALTIMORE is a composite of the best of her predecessors.

SEVERE BUOY WAVE CONDITIONS

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The environmental conditions associated with the capsizing of four NOAA Data Buoy Office (NDBO) discus buoys were described by Hamilton (1980) in the May-June 1980 issue of the Mariners Weather Log. In all four capsizings the conditions were found to be remarkably similar. In general, peak wave energy occurred at relatively long periods. Cold, postfrontal troughs with intense convective cells and thunderstorms passed the buoys near the time of the capsizings, and it was postulated that strong gusty winds from the squalls created high, short-period waves. With large amounts of energy in long-period waves present, the additional impetus of high frequency energy presumably resulted in increased height by superposition and breaking of the crests of the longer period waves. These conditions seemingly precipitated the buoy capsizings.

On January 20, 1980, an additional 10-m discus buoy (hull number 10D4) capsized at station 46003 near 52°N, 156°W which is about 400 mi south-southwest of Kodiak Island in the Gulf of Alaska. The buoy was recovered on July 15, 1980, by a U.S. Coast Guard vessel and found to be inverted but still attached to the mooring line. The buoy had been deployed on July 13, 1978, at the station in 15,895 ft of water. This present study was initiated to examine the weather conditions

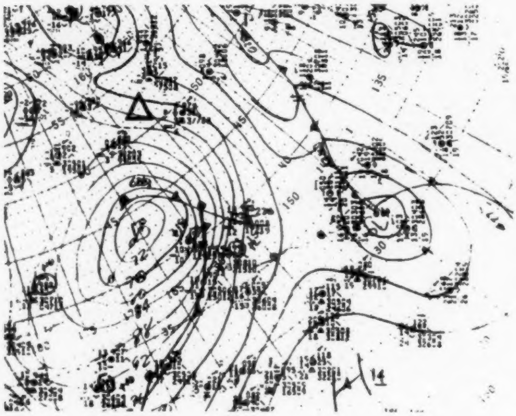

Figure 1.--Surface analysis for 0000 January 20, 1980.

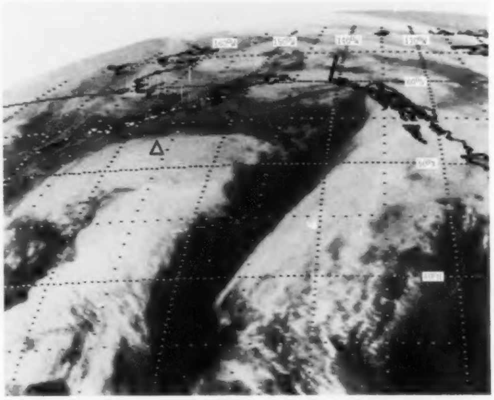

Figure 2.--GOES infrared image at 0015 January 20, 1980.

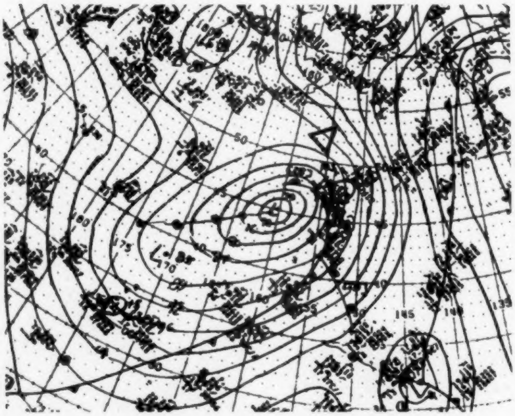

Figure 3.--Surface analysis for 0600 January 20, 1980.

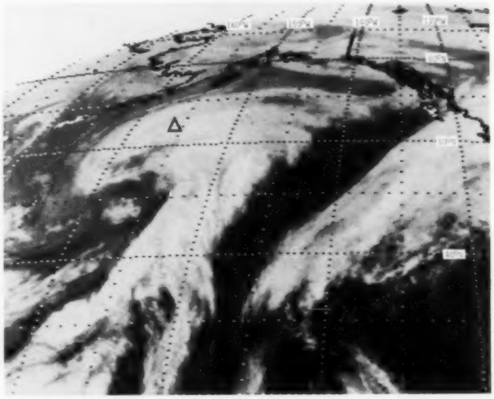

Figure 4.--GOES infrared image at 0615 January 20, 1980.

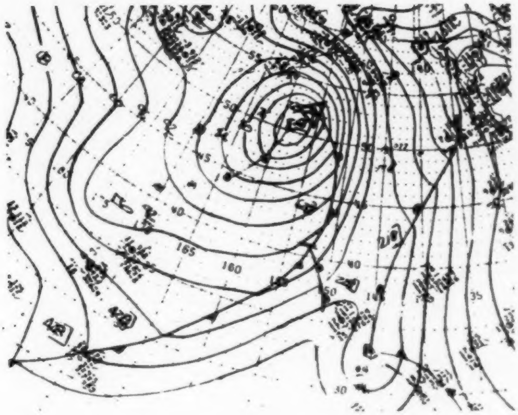

Figure 5.--Surface analysis for 1200 January 20, 1980.

Figure 6.--GOES infrared image at 1215 January 20, 1980.

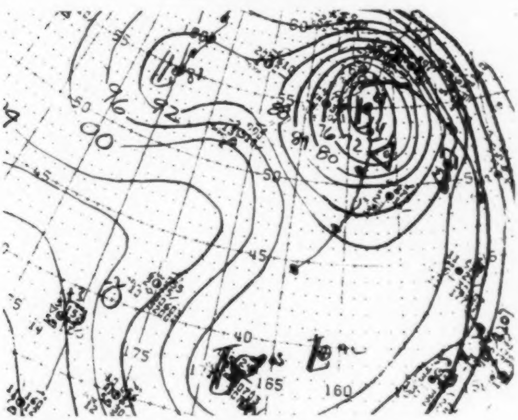

Figure 7.--Surface analysis for 1800 January 20, 1980.

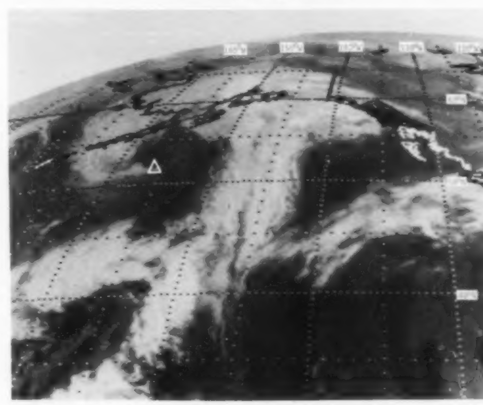

Figure 8.--GOES infrared image at 1815 January 20, 1980.

associated with the latest capsizing and make a comparison with other findings.

Another NDBO buoy recorded an exceptionally high significant wave height of 48.5 ft which is the highest ever measured by an NDBO buoy and one of the highest ever reported anywhere. This buoy did not capsize, and the associated environmental conditions are compared to those experienced by the capsized buoys.

SYNOPTIC SITUATIONS AT TIME OF CAPSIZING

Weather maps analyzed at the National Meteorological Center were used to define the synoptic situations. Figure 1 shows an intense low pressure system southwest of station 46003 (indicated by a triangle) on the 0000 January 20, 1980, surface analysis. The buoy was apparently under the influence of southeasterly wind flow, and at that time the significant wave height (H_s) reported by the buoy was 13.8 ft. The wave sensor was the only instrument functioning on 10D4.

There is evidence of a deep trough of low pressure extending southwestward from the center of the LOW. The cloud regime associated with the storm relative to the buoy can be seen in the GOES infrared image at 0015 (fig. 2).

By 0600 the storm center had moved northeastward to a position some 470 mi south-southwest of the buoy which was still primarily under southeasterly flow (fig. 3); the cold trough was still evident. The GOES IR image at 0615 is shown in figure 4. The buoy H_s at 0600 was 15.7 ft.

At 1200 the LOW center was probably about 100 mi southwest of the buoy (fig. 5), and the general shape of the postfrontal trough was maintained. The GOES IR image at 1215 (fig. 6) shows the outline of the trough. The buoy significant wave height at 1200 (last report received) was 22 ft.

Presumably, the buoy capsized between 1200 and 1800. The synoptic situation at 1800 (fig. 7) indicates the buoy position was south of the center of the storm and in the trough. A ship located about 150 mi to the south of 46003 (10D4)

reported a wind of 45 kn from the southwest. The GOES IR image at 1815 (fig. 8) indicates that a line of clouds, possibly thunderstorms, was close to the buoy.

Prior to 0000 of the 20th, the buoy site had apparently experienced a period of westerly winds before becoming southeasterly by 0000. Subsequently, the wind flow seems to have remained southeasterly for approximately 12 hr until 1200. At 1200 the storm was located in a data-sparse area (fig. 5), and it is difficult to determine the exact location of the center and the wind flow at the buoy site.

To assist in the evaluation, spectral wave data from the U.S. Navy Fleet Numerical Oceanography Center (FNOC), Monterey, CA, were obtained. Table 1 provides the environmental data used and produced by the Spectral Ocean Wave Model (SOWM) (independent of buoy wave data) at FNOC at two grid points (designated Points A and B in Table 1) approximately 120 mi southwest and northeast respectively of station 46003 at 0900, 1500, and 2100. Unfortunately, SOWM data were not available for the synoptic times of 1200 and 1800. In general, the sea heights were analyzed as increasing with time from a southeasterly direction; however, there was found to be a secondary peak energy from directions different from the direction of peak energy at Point A at 1500 and 2100. At 2100 the winds at both grid points had veered clockwise with the passage of the trough, and the significant wave heights continued to increase. The SOWM data tend to agree with the reported buoy wave heights and support the pattern of strong southeasterly winds succeeded by a trough passage near the time of capsizing.

With no wind observations on the buoy it is difficult to say exactly what type of conditions were actually experienced at the site just prior to capsizing. However, it is apparent that the buoy was near the trough at that time. In the previous capsizings, the wind directions were fairly constant before capsizing, and the SOWM waves were unidirectional. At 46003 it is possible that the wind created a crossing sea.

Table 1.--U.S. Navy Fleet Numerical Oceanography Center Spectral Ocean Wave Model Environmental Data

	A	B
Station 46003 (52°N, 156°W)	51.3°N 158.8°W	52.4°N 154.1°W
WIND DIRECTION/SPEED (kn)		
0900Z	097/20.3	136/26.4
1500Z	049/15.3	126/30.1
2100Z	355/13.0	168/27.3
SIGNIFICANT WAVE HEIGHT (ft)		
0900Z	14.1	19.0
1500Z	14.9	24.1
2100Z	19.5	27.3
DIRECTION OF PEAK ENERGY		
0900Z	130	133
1500Z	100	133
2100Z	310	133
DIRECTION OF SECONDARY PEAK ENERGY		
0900Z	---	---
1500Z	190	---
2100Z	130	---
PEAK PERIOD (S)		
0900Z	8.5	12.3
1500Z	12.3	12.3
2100Z	10.8	12.3
SECONDARY PEAK PERIOD (S)		
0900Z	10.8	14.9
1500Z	16.3	14.9
2100Z	----	17.8

HIGHEST SIGNIFICANT WAVE HEIGHT EVER

Approximately two months earlier another buoy in the Gulf of Alaska experienced an extreme significant wave height of 48.5 ft. In fact, this measurement is the highest ever reported by an NDBO buoy and is one of the highest ever measured. Draper (1981), of the Institute of Oceanographic Sciences, Wormley, UK, remarked

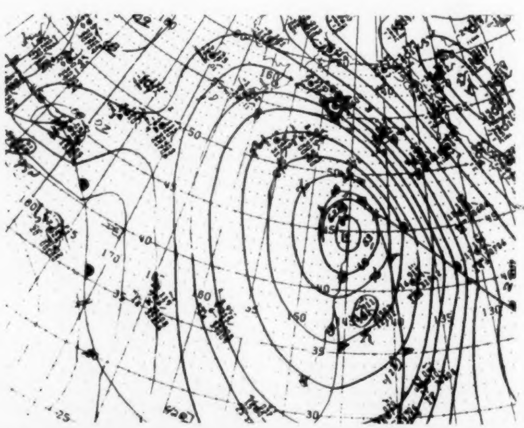

Figure 9.--Surface analysis for 1200 November 27, 1979.

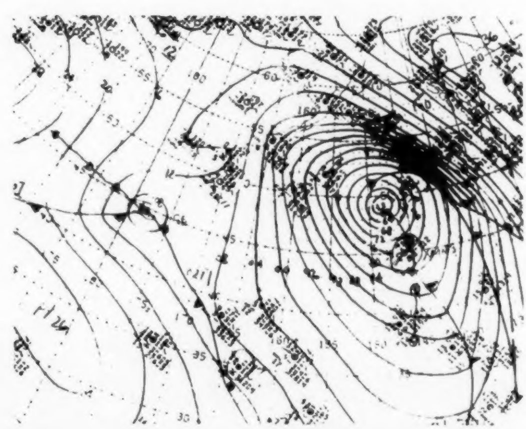

Figure 10.--Surface analysis for 1800 November 27, 1979.

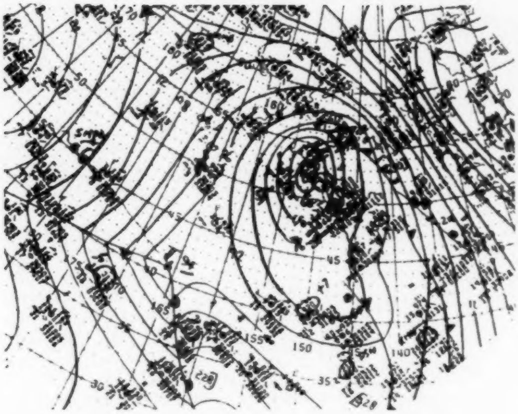

Figure 11.--Surface analysis for 0000 November 28, 1979.

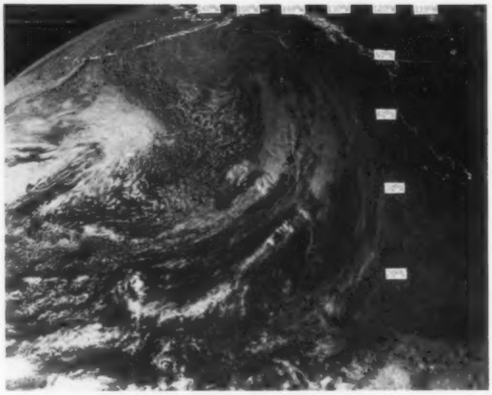

Figure 12.--GOES visible image at 0046 November 28, 1979.

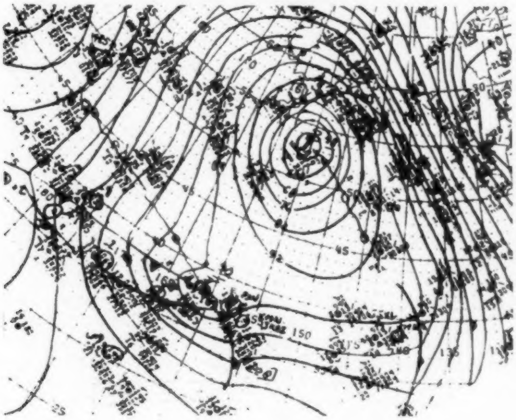

Figure 13.--Surface analysis for 0600 November 28, 1979.

Figure 14.--GOES infrared image at 0615 November 28, 1979.

that the highest wave height experienced by the buoy was probably around 95 ft. He reported that in 25 years of measuring waves on Ocean Weather Stations (OWS) in the Northeast Atlantic that the highest values recorded were at OWS INDIA (59°N, 19°W). One instrument recorded the highest value of H_s of 58 ft with the highest wave on the record of 85 ft. On another occasion, the significant wave height was 53.2 ft, and the highest individual wave on the record was 86 ft. NDBO buoys sample waves for 20 min and compute spectral wave data and significant wave height but not the height of individual waves.

The NDBO measurement of 48.5 ft was recorded on a 10-m buoy (10D3) on station 46001 at 56°N, 148°W about 150 mi southeast of Kodiak Island at 0600 on November 28, 1979. The buoy did not capsize and as the data were transmitted every hour, it represented a good opportunity to examine the situation in detail. 10D3 was deployed at station 46001 on January 31, 1979, in 13,500 ft of water.

At 1200 on November 27, 1979, an intense LOW of 953 mb was located approximately 720 mi south of station 46001 and moving northward. Figure 9 is the surface map at 1200 analyzed for every 8 mb near the storm. At that time the buoy was reporting winds of 24 kn from 113°, and the significant wave height was 6.9 ft. The cyclone moved north-northwestward and at 1800 in figure 10 (analyzed every 4 mb) was about 500 mi south of 46001. The wind and seas at 46001 had continually increased and at 1800 the winds were 45 kn from 085° and a significant wave height of 15.7 ft.

By 0000 on November 28, 1979, the center was approximately 300 mi southwest of 46001 (fig. 11), and the buoy reported winds of 44 kn from 104° and a significant wave height of 35.8 ft. The GOES visible image at 0046 November 28, 1979 (fig. 12), portrays the relation of the buoy position to the frontal cloud bands. The storm slowly drifted northwestward and at 0600 (figs. 13 and 14) was still an intense center of 952 mb. The highest significant wave height of 48.5 ft was reported at 0600 when the winds were 41 kn from 129°. After 0800, the conditions diminished in intensity as the LOW remained sta-

Table 2.--Data reported by buoy 10D3 at station 46001 during extreme significant wave height occurrence

DATE TIME	PRESSURE (mb)	WIND DIRECTION SPEED (kn)	PEAK WIND (kn)	SIGNIFICANT WAVE HEIGHT (ft)	MEAN PERIOD (Sec)	PEAK PERIOD (Sec)	AIR TEMPERATURE (°C)	SEA TEMPERATURE (°C)
11/28/79								
00Z	980.1	104/44	53	35.8	11.2	14.3	7.0	6.9
01Z	978.8	110/45	54	38.0	11.4	14.3	7.5	6.9
02Z	978.5	121/44	56	41.0	12.3	16.7	7.9	6.9
03Z	979.2	133/44	51	39.7	12.1	16.7	8.7	6.9
04Z	981.3	130/44	52	39.0	12.2	16.7	8.5	6.9
05Z	982.8	131/43	54	42.6	12.6	16.7	8.6	6.9
06Z	984.8	129/41	48	48.5	13.4	16.7	8.5	6.8
07Z	986.5	128/42	53	39.7	11.9	16.7	8.6	6.8
08Z	988.0	126/42	53	42.3	12.2	16.7	8.4	6.8
09Z	989.2	125/41	48	36.4	11.4	16.7	8.2	6.8

tionary and weakened. The buoy conditions from 0000 to 0900 on November 28, 1979, are shown in table 2; peak wind refers to the greatest 4-sec sliding average wind in the 8.5-min sampling interval. By 1800 the winds were 112° at 22 kn, and the significant wave height was 29 ft.

The question naturally arises as to why buoy 10D3 did not capsize while being subjected to the most severe sea state ever recorded by an NDBO buoy. The obvious difference between 10D3 and the other five capsizings is that the buoy was never located in the cold, unstable air to the south of the LOW.

SUMMARY

The weather conditions associated with a capsizing of an NDBO buoy (10D4 at station 46003) were examined and compared with four previous capsizings. The situation at 46003 was slightly different in that strong southeasterly winds existed for a considerable time before capsizing, while in the earlier capsizings the winds had been more westerly. Nevertheless, just prior to capsizing, a postfrontal trough south of a low center moved over the buoy in a similar manner as to what occurred in the prior capsizings. As only the wave sensor was operating on 10D4, it was impossible to determine how much colder (and unstable) the air was in the trough or conjecture how much the winds may have shifted and affected the sea state.

The conditions were also investigated at station 46001 where buoy 10D3 experienced the highest significant wave height (48.5 ft) ever reported by an NDBO buoy. It was found that throughout the entire period of severe sea state the winds remained southeasterly as the intense associated storm did not move north of the buoy position and allow a cold trough to pass the buoy. The air temperature continued warmer than the sea for the entire period.

In all cases investigated, it appears that the buoys do not tend to capsize unless large amounts of long-period wave energy present in the sea occur in conjunction with thunderstorms and squalls in an unstable air mass of a cold, postfrontal trough. As discussed in the opening paragraph, it is again postulated that strong gusty winds from squalls in cold troughs create high, steep, short-period waves. Superposition of these waves on the longer waves increases the overall height which results in the breaking of the crests of the longer waves. These conditions presumably precipitate capsizing.

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GREAT LAKES NAVIGATION SEASON, 1981

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The 1981 navigation season opened on the St. Lawrence Seaway on March 25 when the RICHLIEU entered the St. Lamberts Locks at 10 a.m. The RALPH MISENER sailed downbound through the Eisenhower Locks in the afternoon, delayed by fog. This opening was a day later than the record opening of March 24 set in 1980. The Welland Canal also opened on March 25 with the AGAWA CANYON passing upbound. The ROBERT S. PIERSON passed downbound on the 26th. The first foreign vessel was the URANIA C. on the 30th.

The Poe Lock of the Soo Canal opened on March 24 and the CARTIERCLIFFE HALL locked downbound and the SCOTT MISENER upbound on the 26th. The URANIA C. passed through on April 1. Some vessels had sailed earlier in March where locks were not required, including the RICHARD J. REISS, S.T. CRAPO, and AMOCO WISCONSIN. The AMOCO WISCONSIN arrived at Sault Ste. Marie, Mich., on March 3, escorted by the icebreakers KATMAI BAY, MACKINAW, MOBILE BAY, and WESTWIND. The S.T. CRAPO passed through the Straits of Mackinac on the 20th and required assistance from the BISCAYNE BAY due to thick ice.

On April 1 two vessels took weather observations, the E.M. FORD built in 1898 and second oldest sailing the Lakes, and the AMOCO WISCONSIN. Three buoys were placed in position in April.

The season on the Seaway closed on December 20 when the MONTCLIFFE HALL cleared the St. Lambert Lock. The RALPH MISENER was the last upbound laker on the 19th, and the saltie SANTA TERESA was the last both upbound and downbound. The locks were dewatered on the 21st.

The Welland closed on December 27 with the CANADIAN MARINER sailing downbound and the J.W. MCGIFFON upbound on the 23d. The PAVEL VAVILOV was the last saltie on the 14th(fig. 15).

Figure 15.--The 532-ft PAVEL VAVILOV at Detroit on Dec. 8, and the last ocean vessel through the Welland Canal. Photo by Albert Ballert, Great Lakes Commission.

The JOHN A. FRANCE carried the last cargo eastbound through the Soo on December 30. The INDIANA HARBOR and WILFRED SYKES passed westbound on the 27th.

Precipitation averaged 32.69 in over the Great Lakes basin and was 3 percent above the long term average (table 3). Precipitation has been above average for 8 of the last 10 yr for an average of 33.70 in. The Lake Superior basin was below average while Lakes Erie and Ontario were much above average. This was particularly true for the July-September quarter.

Table 3.--Annual precipitation data (in)

Precipitation in inches	Gr. Lakes Basin	Lake Superior	Lake Michigan	Lake Huron	Lake Erie	Lake Ontario
1900-81 avg.	31.77	29.81	31.39	31.53	34.13	34.70
1981	32.69	28.37	31.51	32.30	39.35	38.16
1981/avg.	+3.0%	-5.0%	0.0	+2.0%	+15.0%	+10.0%
1980	32.93	29.59	32.11	33.90	35.86	36.87

NATIONAL WEATHER SERVICE

The National Weather Service (NWS) conducted the marine weather program in 1981 from five Weather Service Forecast Offices (WSFO) and nine Weather Service Offices (WSO) in the Great Lakes region. Products and services included weather warnings, forecasts, advisories, and statements; ice forecasts and outlooks; low water statements; and Lake Shore Warnings and Statements.

In terms of the number of Gale and Storm Warnings issued, 1981 was reasonably tranquil, continuing the trend of the last 5 yr. The total number of Gale and Storm Warnings in 1981 was 136 (table 4) as compared to 399 in 1976.

Table 4.--Gale and storm warning summary for 1981

	Ontario		Huron		St. Clair		Superior		Michigan		Erie	
Month	G	S	G	S	G	S	G	S	G	S	G	S
January	-	-	3	0	0	0	3	0	3	0	3	0
February	-	-	3	1	1	0	2	1	3	1	2	1
March	-	-	0	0	1	0	1	0	2	0	0	0
April	2	0	3	0	2	0	3	0	3	0	4	0
May	0	0	1	0	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0	0	0	0	0
Septebmer	0	0	4	0	0	0	2	0	1	0	4	0
October	3	0	4	1	2	0	6	2	6	1	8	1
November	1	0	6	0	0	0	7	1	5	0	5	0
December	0	0	5	0	0	0	4	0	5	0	3	0
TOTALS	6	0	29	2	6	0	28	4	28	2	29	2

Total Gale and Storm Warnings issued by year

1981	136	1978	241
1980	173	1977	262
1979	227	1976	399

Three new data buoys were added in 1981 bringing the total to eight buoys in the Great Lakes network. The three buoys were deployed as follows: western Lake Superior, June 23; southern Lake Michigan, July 14; and southern Lake Huron on September 25. Deployment of the network began on April 11, 1981, and retrieval at season's end was completed on December 13, 1981.

The total number of ship weather observations received by the NWS in 1981 was 29,796 making this one of the best years on record. Observations are the basic raw material of the finished warning and forecast products and the Great Lakes marine community is to be congratulated for this high degree of cooperation. Over 26,000 of these observations were transmitted back to the user in the LAWEB bulletin prepared by the WSFO at Cleveland. The season opened with the first observations received from the E.M. FORD and the AMOCO WISCONSIN. The season closed with the last reports coming in from the J.L. MAUTHE and the ENDERS M. VOORHEES.

One of the NWS' goals for improved warning and forecast services is the establishment of a Great Lakes Service Unit (GLSU) at the NWS forecast office in Cleveland. The GLSU will consolidate services now provided by four forecast offices (Buffalo, Cleveland, Ann Arbor, and Chicago) into a "one-stop" facility while keeping localized (i.e., nearshore) warning and forecast responsibilities decentralized among other selected weather offices in the region.

NWS is reviewing its weather and wave observation programs on the Lakes. Requirements in the cooperative ship observation program, coastal headland observations, buoys, and wave measurements will be examined to determine the adequacy of data acquisition networks for enhanced warning and forecast services. Product dissemination improvements will be studied to find ways of delivering weather information to the mariner in both narrative and graphic form in a more timely fashion.

OBSERVATION PROGRAM

The National Climatic Center received 14,473 observations from 54 ships this year. Lake Superior had the largest number of observations--6,313. June produced the largest number --2,478 (table 5). Table 6 shows a breakdown of the numbers of selected data observations. Tables 7 to 9 show the distribution of high winds and seas. June had the most observations with visibility under 2 mi and Lake Superior headed the list. The largest and newest boat on the Lakes, the WILLIAM J. DELANCEY (fig. 16), found 25-ft waves on Lake Superior on October 1. The BURNS HARBOR had 56-kn winds that day also on Lake Superior.

This article and tables include only those weather observations logged on Great Lakes Observation Form 72-2 and forwarded to the National Climatic Center.

Table 6.--Summary of Selected Data

	Winds	Visibility	Severe Wx	Sea Heights	
Selection Criteria	>30 kn	Code <96	Code=13,17-19,24, 27,29,57 or > 86	Code 8-12 (12 to 20 ft)	Code >12 (>20 ft)
Total # of obs	420	1140	213	36	1

Table 7.--High wind speed distribution (knots)

Lake	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Totals
Ontario													
34-40										1			1
Erie													
34-40									1	2	5	2	10
41-47										3	1		4
48-55										2			2
Huron													
34-40				6	6	2	1	3	11	16	13	11	69
41-47				3	4					4	2		13
48-55										4			4
Michigan													
34-40			1	1	9	2	1	2	11	25	11	5	68
41-47					2					8	4	1	15
48-55									1		1		2
Superior													
34-40				4	4	4	1	2	19	28	19	4	85
41-47				3	1				4	4	1	1	14
48-55						2			2	6			10
56-63										1			1
Totals													
34-40			1	11	19	8	3	7	42	72	48	22	233
41-47				6	7				4	19	8	2	46
48-55						2			3	12	1		18
56-63										1			1

Figure 16.--The 1,013.5 ft WILLIAM J. DELANCEY is the largest bulk carrier on the lakes. She is upbound on the Detroit River on her maiden voyage on May 10. Photo by Albert Ballert, Great Lakes Commission.

NOTABLE WEATHER HAPPENINGS

As usual Lake Superior was the stormiest lake, but this year October was the stormiest month. The highest wind of 56 kn and waves of 25 ft were measured on Lake Superior, both on October 1, but by different boats. There were slightly more severe weather observations (thunderstorms, squalls, etc.) on Lake Huron than Lake Superior, 79 versus 74. This becomes more significant when the total number of observations are considered.

Table 5.--Total Count of Ship Observations for 1981

Lake	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Totals
Ontario				1				2	3	5			11
Erie				49	124	133	141	126	88	85	65	37	848
Huron	2	5	5	210	595	644	585	617	438	343	324	96	3864
Michigan	12	22	21	125	502	559	466	463	440	470	248	109	3437
Superior				300	945	1142	1024	1024	646	636	464	132	6313
Totals	14	27	26	685	2166	2478	2216	2232	1615	1539	1101	374	14473

There were a total of 3,864 observations on Huron and 6,313 on Superior. Slightly more than 2 percent of the observations on Lake Huron had severe present weather and slightly more than 1 percent on Lake Superior (table 6).

The data and number of observations must be evaluated in terms of the season and number of ships operating. Some of the most severe storms are likely to occur during the winter months when very few boats are operating.

The following paragraphs describe some of the more significant weather as indicated by the observations. January, February, and March are not covered. Tracks of the more severe storms are shown on figure 17.

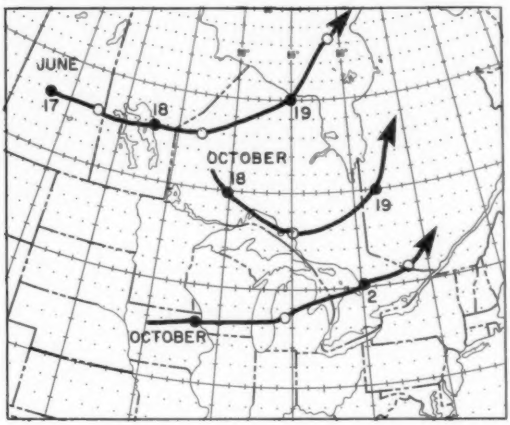


Figure 17.-- Tracks of storms with winds over 50-kn and waves over 15-ft.

APRIL

A double centered LOW was over the Great Plains on the 3d. By 1200 on the 4th it was 986 mb over Wisconsin. The ERNEST R. BREECH had easterly 37-kn winds on western Lake Superior. By 1800 they had switched to northerly. She was near the center of the Lake at 0600 on the 5th with 41-kn northerly winds. The LOW had passed over Sault Ste. Marie at 0000. There was snow over Lakes Michigan, Huron, and Superior with the temperature dropping below freezing. Late in the day, the storm moved over Quebec and the gradient relaxed.

A few days earlier on the 2d and 3d there were record high temperatures for the date. On the 2d Sault Ste. Marie reached 58°F and Pellston, Mich., had 66°F. On the 3d Alpena, Mich., reached 81°F and Buffalo, N.Y., had 75°F.

A north-south front was over Duluth on the 13th producing a thunderstorm. A frontal wave moved rapidly northeastward along the front and at 1200 on the 14th was over Georgian Bay. This storm produced the most high winds and the highest wind for the month--45 kn. Forty knots or greater was measured on Lakes Huron, Michigan, and Superior. The stronger winds were all in the northwest flow. The WILLIAM CLAY FORD found the 45 kn at 1800 on the 14th on Lake Huron. The WOLVERINE

Table 8.--Highest seas by lake

Lake	Ship	Date	Height (ft)
Ontario	ENDERS M. VOORHEES	Oct. 18	10
Erie	ENDERS M. VOORHEES	Nov. 27	12
Michigan	EDWIN H. GOTT	Sept. 28	15
	CHARLES M. BEEGHLY	Oct. 25	
	AMERICAN MARINER	Dec. 01	
Superior	WILLIAM J. DELANCEY	Oct. 01	25

also on Lake Huron had 13 ft waves. The storm moved over Labrador on the 15th.

This LOW developed over southern Saskatchewan on the 16th. It moved eastward and was near the Soo Canal at 1003 mb at 0000 on the 18th. At 0600 the JOHN DYKSTRA measured 41-kn northerly winds on central Lake Superior. At 1200 the JOSEPH H. THOMPSON measured 42-kn winds out of the northwest on northern Lake Huron. The LOW was over Nova Scotia on the 19th.

MAY

The only significant storm this month according to reports from the lakers moved over the basin from the 10th through 12th. It was over Texas on the 9th. It was over Evansville, Ind., at 1001 mb at 0000 of the 11th. The first report over 40 kn was by the AMERICAN MARINER on Lake Huron at 1800 of the 10th. On the 11th there were several reports higher than 40 kn but the highest was 45 kn from the north over Lake Michigan at 1800 of the 11th (fig. 18). This was also highest for the month. The EUGENE P. THOMAS turned in the highest wave report of 13 ft on the 11th. The GEORGE A. STINSON had a thunderstorm over Lake Huron. The storm moved over Toledo, Ohio, early on the 12th. The WALTER A. STERLING measured 42 kn at 0600 on southern Lake Huron. There was no concern by the 13th. The WILLIAM J. DELANCEY, the longest boat on the lakes, loaded her first cargo of pellets at Silver Bay, Minn., the night of the 12th to 13th.

The morning of May 20 record low temperatures were set in Chicago, Ill. (35°F) and Detroit, Mich. (33°F).

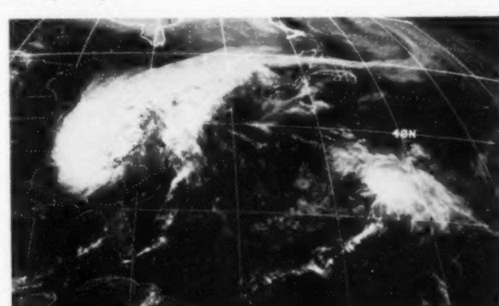


Figure 18.--The storm at 1700, May 11.

JUNE

The A.H. FERBERT struck bottom on the 14th in the St. Marys River in thick fog. She had been forced to anchor with 29 other vessels because of the fog. Heavy rain storms over northwestern Ohio in midmonth resulted in a 7 mi/hr current in the Maumee River, resulting in the stranding of the SOO RIVER TRADER, CANADIAN HUNTER, and T.R. MCLAGAN. The A.S. GLOSSBRENNER and VANDOC were forced to anchor in Maumee Bay for several days until the current slowed.

The storm of the month formed over Saskatchewan on the 16th. It was 980 mb east of Lake Winnipeg at 1200 on the 18th (fig. 19). Most of the high winds were over Lake Superior, with one minimal gale report on northern Lake Michigan by the HOMER D. WILLIAMS. The PAUL H. CARNAHAN measured 52-kn westerly winds at 1800 on central Lake Superior. Less than 10 mi away the AMERICAN MARINER measured 48 kn from the northwest. There were still some gales on the 19th as the storm moved over Hudson Bay.

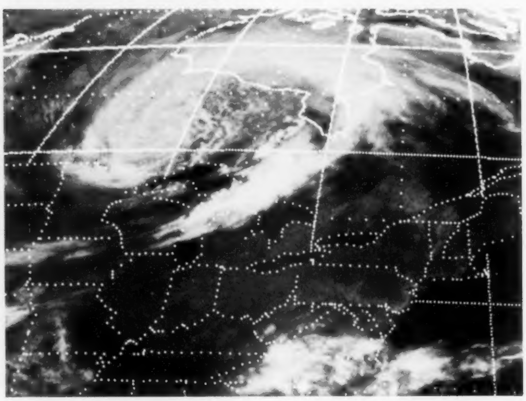


Figure 19.--The storm was centered north of Duluth at 1700, June 18.

Reports of thunder, lightning, squalls, and thunderstorms were scattered throughout the month over Lakes Huron and Michigan, but were mostly concentrated during the first 2 weeks over Lake Superior. At 0000 on the 25th the WOLVERINE sighted a funnel cloud over northern Lake Michigan. Record cold temperatures were noted at Sault Ste. Marie (36°F), Cleveland, Ohio (44°F), and Milwaukee, Wis. (47°F) on the 27th.

The JOSEPH L. BLOCK rescued the fishing tug RAMONA about 14 mi northeast of Grosse Point Light on Lake Michigan about 10:30 p.m. on the 15th. The tug lost power in dense fog and threatening weather. The BLOCK stood by until 2:20 a.m. when the Coast Guard arrived.

JULY

The month was quiet weatherwise. The highest wind reported was 36 kn and occurred with fog. Low visibility was the greatest problem. At 5 a.m. on the 20th, the Soo Locks were closed because of dense fog and traffic was halted along the St. Marys River and Straits of Mackinac. Record low temperatures occurred over parts of Michigan on the 23d with Sault Ste. Marie reaching 39°F.

The major wind storm was associated with a front and frontal waves along the front the last week of the month. The cold front passed over Duluth early on the 25th. At 1200 on the 26th a frontal wave was near Toledo. The G.M. HUMPHREY on Lake Huron, the HERBERT C. JACKSON on Lake Michigan, and the EDGAR B. SPEER on Lake Erie all found 32- to 34-kn winds. The front dropped south of the Lakes on the 27th but another frontal wave moved it northward again on the 28th. At 1200 the wave was centered near Gary, Ind. Minimal gales were found on Lakes Michigan and Huron by the EDWARD L. RYERSON, CALCITE II, and RESERVE. The frontal wave moved to the east and high pressure was over the area on the 29th.

AUGUST

August was even quieter than July. There were only eight reports of winds greater than 30 kn on all the lakes. Fog was the weather element most often reported. Reports of squalls, thunder, thunderstorms, and lightning favored Lakes Huron and Michigan. There were no winds reported over gale force.

A warm front was over the lakes on the 14th. By the 15th the associated LOW was over James Bay and the cold front over Lake Superior. At 1200 the JOHN DYKSTRA measured 36-kn northerly winds on Lake Superior as a wave developed over Michigan. On the 16th a HIGH was pushing toward Duluth and tightened the gradient. At 1200 the ARMCO measured 38-kn northeasterly winds on Lake Huron, the highest wind for the month. The CHARLES M. BEEGHLY had 34 kn on Lake Michigan. By the 17th the HIGH dominated the basin.

On the early morning of the 19th high pressure dominated the basin and with clear skies several cities set new low temperature records including 37°F at Alpena, Mich.

SEPTEMBER

The number of high wind reports increased this month, primarily the last week with one storm. Other severe weather occurred earlier in the month primarily as squalls or thunderstorms. The highest wave was 16 ft observed by the ARMCO on Lake Huron on the 17th.

At 0000 on the 22d a weak frontal wave was located over Chicago. The AMERICAN MARINER was near Michigan City, Ind., and measured 49-kn northeasterly winds, the second highest of the month, probably with cumuliform activity.

The temperature dropped to 29°F at Sault Ste. Marie on the 9th, a new record. The locks were closed due to fog the morning of the 13th.

The only major severe storm was over Nevada on the 24th. It traveled northeastward and deepened over Lake Winnipeg on the 26th. Late that day there were two reports of minimal gales on Lake Michigan. By 1200 on the 27th the LOW was 982 mb north of Thunder Bay. The front was near Cleveland. During the day there were winds in the low 40's. At 1800 the BENJAMIN F. FAIRLESS measured 45-kn westerly winds on western Lake Superior. The SAMUEL MATHER measured 43 kn in the same area. Early on the 28th the LOW was

Table 9.--Highest 1-min wind (kn) reported on the Great Lakes by U.S. anemometer-equipped vessels

Year	Lake Erie		Lake Huron		Lake Michigan		Lake Superior		Lake Ontario	
1941	W	42	WSW	50	NW	43	NNW	54	--	--
1942	WSW	52	WSW	56	WNW	48	S	62	--	--
1943	WSW	57	WNW	43	SSW	50	WSW	52	--	--
1944	NE	38	NW	37	WSW	48	NNE	42	--	--
1945	WNW	52	SSW	54	WNW	49	NW	52	--	--
1946	SW	50	W	46	S	44	NW	47	--	--
1947	NW	51	SSE	43	ENE	39	WSW	43	--	--
1948	WSW	40	NNW	51	NW	45	WSW	48	--	--
1949	W	52	NNE	50	NNW	43	N	52	--	--
1950	SW	70	NW	48	NW	49	NW	81[1]	--	--
1951	WSW	37	WSW	50	SW	49	WSW	54	--	--
1952	SW	46	SW	57	SSW	44	WSW	45	--	--
1953	WSW	49	NW	45	NNW	46	ENE	50	--	--
1954	W	45	NW	45	E	48	N	43	--	--
1955	W	52	SW	57	WSW	58[1]	NW	48	--	--
1956	WSW	46	W	43	SSW	46	N	50	--	--
1957	WSW	72	SW	54	WSW	49	W	47	--	--
1958	SW	61	SW	43	SW	52	SSW	54	--	--
1959	W	42	NE	50	E	48	W	54	--	--
1960	NE	55	WSW	49	NW	55	N	54	--	--
1961	W	50	NW	47	NW	48	N	57	--	--
1962	NW	52	WNW	63	NW	48	NNW	60	--	--
1963	NNW	74	NW	60	N	52	NNW	52	E	35
1964	WSW	68	W	72	NW	54	WSW	62	WNW	50[1]
1965	WSW	60	WNW	95[1]	ESE	52	SW	70	W	40
1966	ENE	49	NE	60	NW	57	NNE	61	W	39
1967	WSW	43	W	58	ENE	55	N	53	W	32
1968	W	63	NNW	44	WNW	46	NNE	55	SW	31
1969	WSW	44	NNW	46	NW	50	SSW	50	--	--
1970	W	52	W	62	NW	52	W	63	--	--
1971	SW	50	N	53	N	50	SW	56	--	--
1972	W	45	NW	56	N	54	NNE	60	--	--
1973	SW	45	ENE	44	NE	56	NE	50	--	--
1974	ENE	48	SW	47	SW	42	ESE	46	W	38
1975	NE	40	WSW	60	SW	54	W	50	NW	32
1976	W	48	S	56	NNW	55	NE	54	W	34
1977	WSW	44	SE	48	ESE	44	SW	56	NW	26
1978	SSW	80[1]	ENE	50	E	55	S	56	WNW	33
1979	W	42	W	44	WNW	55	NNE	52	W	26
1980	NNE	44	N	50	NNE	52	S	56	--	--
1981	W	55	NW	50	NW	50	ENE	56	SSE	37
1982										
1983										
1984										
1985										

[1]Highest for each lake

centered over James Bay. The WILLIAM CLAY FORD measured 50-kn westerly winds on eastern Lake Superior at 0000, the highest of the month. The HERBERT C. JACKSON was a few miles to the east and measured 48-kn northwesterly winds with 18-ft seas. The RESERVE also had 18-ft seas on the western part of the lake 6 hr earlier. By 1200 only minimal gales remained.

OCTOBER

Thunderstorm type activity dropped off this month but strong wind observations increased drastically. The highest wind and waves of the year were recorded on the first day in a relatively weak but developing storm (fig. 20).

On September 30 at 0000 a frontal wave was near Cheyenne, Wyo. By 0000 October 1 it was 1008 mb over northeastern Iowa. There was easterly flow over the lakes. At that time the WILLIAM J. DELANCEY was near Duluth with 43-kn winds from 070° and 25-ft waves. At 0600 the BURNS HARBOR was 12 mi to the north and measured 56 kn from the same direction but the waves were only 13 ft. At 1200 the BURNS HARBOR had 50 kn on a northeast track. The DELANCEY was also sailingnortheastward and found 50-kn winds at 1200. There were strong gales on Lake Michigan. On the 2d the LOW was near Ottawa and the lakes were in west to northerly flow. There were gales on Lakes Huron, Michigan, and Superior early that day but by midday the gradient had relaxed.

This was a fast developing storm. At 0000 of the 6th it was a weak frontal wave over southern Iowa. Twenty-four hours later it was 990 mb north of Ottawa. On the 7th there were seven reports of storm-force winds, three of 50 kn on Lake Huron. The WOLVERINE found gales up to 42 kn on Lake Erie. The BURNS HARBOR measured 48

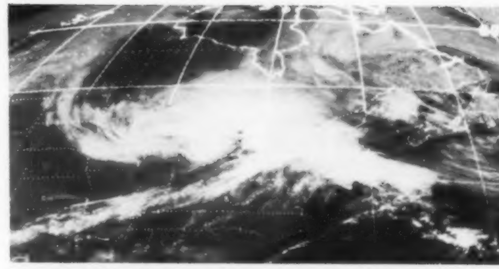


Figure 20.--The strongest storm of the month at 1700, October 1. Earlier it had produced 56-kn winds and 25-ft waves on Lake Superior.

kn from the northwest on Lake Superior. On Lake Michigan the winds were gales below 40 kn. The storm had moved off to the east by the 8th. A small barge laying an intake pipe in Lake Ontario was caught by the storm off Olcott, N.Y. Eleven men were rescued by a Canadian Armed Forces helicopter.

This third storm formed north of Duluth in a sharp trough. It had deepened to 993 mb by 0000 of the 18th and was 980 mb near the Soo Canal at 1200. The winds increased from a maximum of gale force to storm force by 1800 (fig. 21). The IRVING S. OLDS on Lake Erie measured 55 kn from the west north of Cleveland. By 0000 of the 19th the front had swept eastward but there were still strong winds in the northwest flow. The MESABI MINER on eastern Lake Superior measured 48 kn as did the J.A.W. IGLEHART on Lake Erie. Later in the day the storm center jumped northward and minimal gales were the highest winds recorded.

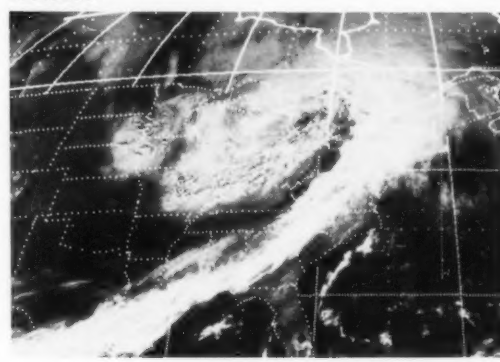


Figure 21.--The storm was centered over northern Lake Michigan at 1800, October 18.

A cold HIGH was centered over southern Indiana on the 24th with a warm front and sharp trough extending southward over the eastern Dakotas. There were minimal southerly gales over Lakes Michigan and Superior. On the 25th the cold front moved over Lake Superior. The BURNS HARBOR measured 44-kn winds and the AMERICAN MARINER 42 kn on Lake Michigan. Gales were found on Lakes Huron and Superior. By the 26th a weak HIGH was approaching the basin and the winds decreased.

NOVEMBER

There was very little thunderstorm activity this month as is expected this far north. At 0000 of the 10th a HIGH was over Iowa with a LOW over Lake Winnipeg. The HIGH split into two centers and the warm front sped across the basin by 1200. There were gales on the three upper lakes. The JOHN DYKSTRA on Lake Superior measured 45-kn winds. The cold front moved through the area early on the 11th with light winds.

This storm came out of Nebraska and was over central Indiana by the 20th. There were a few gale reports on Lake Michigan on the 19th. At 1200 on the 20th the AMERICAN MARINER had 50-kn northwesterlywinds on southern Lake Michigan, the highest wind for the month. This was mostly a Lake Michigan storm according to mailed reports. The MARINER was headed northward and had 45-kn winds through 0000 on the 21st. At that time the front broke away from the original LOW which was north of Niagara. The A.H. FERBERT had 42-kn winds on western Lake Erie and at 1800 38-kn winds on Lake Huron. The worst of the storm had passed by the 22d.

This LOW formed over the Missouri-Iowa border on the 26th. It was over Lake Michigan by 0000 of the 27th. The ELTON HOYT measured southeasterly winds in the low 40's as she sailed from Lake Michigan into Huron on the 26th. The AMERICAN MARINER measured 45-kn westerly winds at 1200 on the 27th on northern Lake Michigan. The stronger winds were now shifting to Lake Superior as several lakers found northwest winds of 40 kn late on the 27th and early on the 28th. The storm was on its way out of the area.

DECEMBER

Reports started getting scarce in December as ships entered early layup. The first significant storm of the month came out of the southwestern United States and was near Lincoln, Neb., at 0000 on the 1st at 985 mb. The AMERICAN MARINER was off Muskegon with 33-kn east-southeasterly winds which increased to 46-kn easterly winds with 15-ft waves by 0600. By 1200 the storm was centered over Iowa. The WILLIAM CLAY FORD on Lake Huron measured winds up to 38 kn during the day (fig. 22). The JOHN G. MUNSON had 32-kn winds from the east off Duluth. The storm passed over Sault Ste. Marie at 0600 on the 2d with no winds over 30 kn reported.

This storm formed off the Pacific coast, moved across southwestern Canada, and the center crossed the lakes on the 7th and 8th. The high winds occurred in the north and northwesterly flow on the 8th and 9th. At 0600 on the 8th the JOHN G. MUNSON was near the center of Lake Superior with 44-kn northerly winds and 13-ft waves.

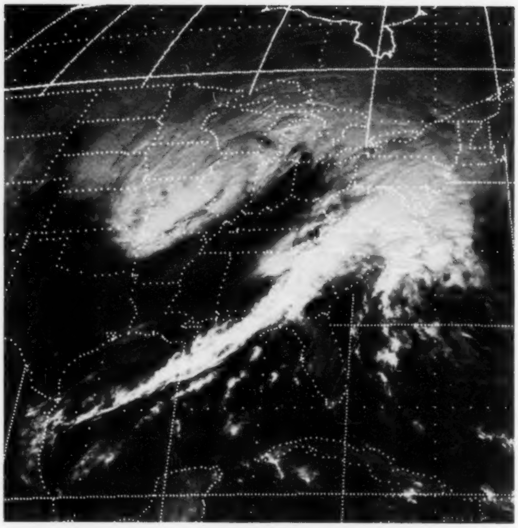


Figure 22.--The storm was over northern Illinois at 1700 on the 1st bring strong southerly winds to the lakes.

The WILLIAM CLAY FORD sailed from Lake Huron into Superior with winds up to 38 kn. The WOLVERINE had gales on northern Lake Michigan. The storm moved off the Atlantic coast on the 9th and continued to stream cold air south out of Canada through the 10th.

The only reports on this Christmas Eve storm were from two ships, the ENDERS M. VOORHEES on Lakes Erie and Huron and the J.L. MAUTHE on Lake Superior. A LOW formed northeast of Duluth on the 23d and traveled northeastward, then northward into Hudson Bay on the 24th. The VOORHEES had winds up to 36 kn on the 24th and early 25th as she sailed into Lake Huron. The MAUTHE had gales up to 38 kn on both days as she sailed northwestward on Lake Superior.

ACKNOWLEDGMENTS

Appreciation is extended to the masters and mates aboard the cooperating vessels for their valuable observations and contribution to the National Weather Service observing program. Useful information and photographs were contributed by Albert G. Ballert of the Great Lakes Commission.

Of primary importance were the listings of wind, wave, visibility, and severe weather observations prepared by the Primary Data Branch of the National Climatic Center, upon which much of the specific weather information is based.

Hints to the Observer

SHIP REPORTS NEAR COASTS

Many storms have their origin or greatly intensify just off the coasts of land masses. Weather reports from ships near coasts are important, and sometimes more important than reports of the weather farther at sea. It is vital to know of the existence and character of storms along the coasts, for forecasting how and when they might affect land areas, especially built-up coastal areas, including ports and coastal shipping. The increasing importance of the Continental Shelf adds emphasis to this need. Meteorological and oceanographic data are vital to the utilization of these areas. The same data are also vital for search and rescue efforts.

Weather forecasting is extremely dependent on knowing the current weather. In general, the forecasts can be no better than the weather observations. Ship reports are one of our most important sources of information for vast areas where there are no other reliable and accurate sources for measuring the surface weather conditions. Meteorological satellites are providing important information, with detail and data continually improving, but they cannot replace good measurements of pressure and pressure changes, air and sea temperatures, sea conditions, and pertinent remarks provided by ship reports. Buoys are being tested and appear to have great potential, but it will probably be many years before their coverage can compare with the number of ship reports available.

The placement of buoys is a good example of the importance of near shore observations, as the first are being moored near-shore, where storms historically form or intensify.

We urgently need your ship observations. To help us do a better job, we ask that weather reports be made and transmitted whenever possible without regard to proximity to land. The newly instituted voice frequencies make it easier than ever to submit your observations.

Tips to the Radio Officer

WORLDWIDE MARINE WEATHER BROADCASTS

The 1982 edition of Worldwide Marine Weather Broadcasts is being prepared. It will be ready for distribution in the fall.

The reason for the delay (the book is usually out in July) is we are making extensive changes in the format. The schedules in the new book will be time oriented rather than station oriented as they are now. We hope this will make the book easier to use.

A sample page from the new book is shown below in figure 23.

TIME	PRODUCT	AREA	FREQUENCY	SOURCE	FIG	NOTE
0000	A	Equator-45°S, 130°E-170°W.	8698	FJP, NOUMEA, NEW CALEDONIA	18	26
0000	F,W	Coastal waters of Papua New Guinea, New Britain, Bougainville, and Bismark Archipelago.	430(A2), 4247, 8515	VJZ, RABAUL, NEW BRITAIN		.
0005	F,W	Fijian coastal waters. Warnings for area: Equator-25°S, 160°E-140°W.	518(A2)	3DP, SUVA, FIJI ISLANDS		31
0018	S,F,W	North Queensland waters from PNG waters to 20°S and between 142°E-160°E and Equator to Australian coast.	488.5(A2), 4228.5, 6333.5	VII, THURSDAY IS., AUST.	19	.
0018		Great Australian Bight, south to 50°S, 129°E-141°E.	472(A2), 4272.5, 6463.5	VIA, ADELAIDE, AUSTRALIA	19	.
0030	A	Equator-45°S, 130°E-170°W.	416.5	FJP, NOUMEA, NEW CALEDONIA	18	26
0048	S,F,W	Equator to coast, 125°E-142°E.	445(A2), 8487	VID, DARWIN, AUSTRALIA	19	.
0048	S,F,W	20°S-28°S, east to 160°E.	472(A2), 4255.6, 6333.5	VIR, ROCKHAMPTON, AUST.	19	.
0100	F,W	Papua, New Guinea waters: Equator-12°S, 141°E-160°E.	484(A2), 6351.5, 13042	P2M, PORT MORESBY, PAPUA		.
0100	W,F	South Pacific, Equator-25°S, 160°E-110°W.	440, 9050, 13655, 16457.4 22472	NMO, HONOLULU, HI, USA		.
0100	F	Marianas, Caroline and Marshall Islands; ocean area Equator-25°N, 130°E-180°.	466, 4955, 8150, 12743, 17146	NRV, GUAM, MARIANAS IS.		.
0130	W,F	Equator-50°S, 100°E-170°E.(Forecasts for: Equator-30°S, 142°E-170°E and 30°S-50°S, 129°E-170°E.)	4286, 6428.5, 8478, 12907.5, 16918.8, 22485	VIX, SYDNEY, AUSTRALIA		.
0155	F	Local waters.	450	ZBP, PITCAIRN IS.		.
0200	W	Equator-50°S, 160°E-140°W.	7600, 11130, 14850, 19488	ZLZ, WELLINGTON, N.ZEALAND		.
0300	F,W	Marianas, Caroline and Marshall Islands; ocean area Equator-25°N, 130°E-180°; North Pacific west of 180° and the Indian Ocean.	466, 4955, 8150, 12743, 17146	NRV, GUAM, MARIANAS IS.		.
0400	F	Samoa and Tokelau Islands.	8585	DUQ, PAGO PAGO, SAMOA		.

JUNE 15, 1982 RADIOTELEGRAPH South Pacific Ocean Page 1

Figure 23.--A sample page from the newly revised 1982 Worldwide Marine Weather Broadcasts.

Marine Observations Program

Marine Observations Program
J. W. Nickerson
National Weather Service, NOAA
Silver Spring, MD 20910

SPECIAL STORM WAVE PHOTOGRAPHS SOUGHT

I don't imagine there are many active mariners who remember the three destroyers lost during a typhoon during World War II, or the cruiser that lost its whole bow. Well, that is about the period where our records start on documented "Freak" or "Rogue" waves and mountainous swell. If you have ever experienced one of these you will never forget it.

Research underway at David Taylor Naval Ship R&D Center(DTNSRDC) dealing with extreme waves has determined that large, well formed waves occur in severe winter storms and tropical cyclones. Such waves have been found to be extremely dangerous to ships because of their unique size and steepness qualities. Based upon recent work performed at DTNSRDC for the Ship Structure Committee, the distinctive wave types of table 10 have been tentatively identified. In order to further identify the characteristics of these dangerous waves we need photographs, old or recent, from mariners.

In figure 24, the photograph was made from the bridge wing of an aircraft carrier, over 100 feet above the water. This wave is identified in the table as Type I; notice that the crest of the wave extends beyond both margins of the photograph at about the same wave height, suggesting its long crested nature. It is apparently raining or foggy so there is a haziness to the photo.

Figure 25 is a much clearer photo that provides excellent detail of this Type I wave. Just in front of this very steep, high wave is a deep trough. As the wave approaches, the ship will tip downward into the trough, then the wave will come crashing aboard. These photos help to characterize the Type I wave. What we need now are more photos of these and the other wave types. Can you help us, please.

Figure 24 - Steep, Long - Crested Wave as seen from the aircraft carrier USS INDEPENDENCE CV-62 during a winter storm.

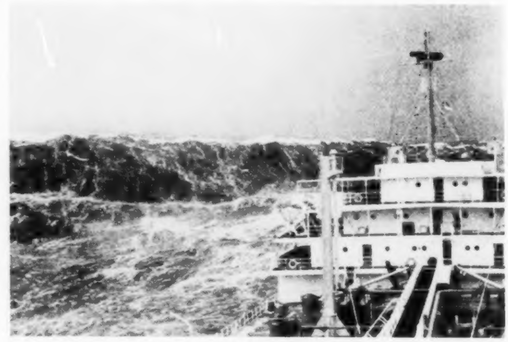


Figure 25 - Steep, Long - Crested Wave as seen from unidentified ship in a winter storm.

On the back of our ship's Weather Observations, NOAA Form 72-1A is a section for reporting "Freak" waves. The term freak doesn't really fit because we know that these are a normal, expected phenomena in certain types of severe storms at sea. We think they should be called Special Storm Waves. Unfortunately, we don't have enough observations to attempt forecasting these conditions. However, you can help us pin down and define the conditions and areas where they do occur geographically and in relation to the storm's center.

To move this endeavor forward we need (new or old) photographs and detailed documentation of these waves. When, where, and effect on ship. Send them to:

J. W. Nickerson - W521x2
National Weather Service/NOAA
8060 13th Street, Room 730
Silver Spring, Maryland 20910

If you send negatives, I will have prints made and return them. Unless you specifically request it, photographs will not be returned. We will make them available to various scientific organizations studying these phenomena. We will also publish the progress of their work in this magazine.

SHIP'S WEATHER OBSERVATIONS, Form 72-1A

There seems to be very few problems with the new synoptic code. In some cases we are getting too much, rather than too little. For instance:

- Any group with a numbered group indicator to the right of the Nddff may be omitted, if there is nothing significant to report. Example: Don't send 7//// or 80000. Omit the groups entirely.

Table 10.--LARGE, LONG-CRESTED STORM WAVES FOR WHICH PHOTOGRAPHS ARE SOUGHT

Type Designation	Description	Comments
I.	Steep, white water on crest; "hole-in-the-sea" in front;[1] usually occurs as a single large wave aligned with other waves in the seaway.	Known to occur in strong, increasing storm winds. Tend to reoccur as "every 7th wave" among the larger waves in the seaway. These large, steep waves are apt to cause local damage to a ship or its life boats, accommodation ladders, etc.
II. A.	Group of large waves--usually three, with the second wave being highest. The group is aligned with other large waves in the seaway.	Likely to occur in strong winds which have peaked or begun to decrease in strength. During the period of peak winds these waves are apt to be much higher than the other large waves in the seaway. This wave group can produce severe hull girder bending stresses.
III.	Group of large waves, usually three, misaligned by 30 degrees or more to local wind-driven seaway.	Wave group intrudes unexpectedly into local seaway and produces locally high wave crests at intersections with the largest waves in the local wind-driven seaway. The wave group tends to cause severe roll response of a ship.
IV.	Large breaking wave(s) intruding into local seaway at angles up to 50 degrees from direction of local wind driven seaway; of unusual height with respect to other waves in the local seaway.	Frequently characterized as a "rogue" waves(s). Very dangerous due to associated "wall of water" and the fact they appear unexpectedly.

Note 1: The "rogue" waves which occur in the Agulhas Current off the southeast coast of Africa have this characteristic, but these are not the waves being described here. (Photographs of such waves are welcome never-the-less. For example, see page 429 of the October 1981 issue of National Geographic magazine).

- The Weather Group, $7wwW_1W_2$, is a little tricky. If the weather is "without significance" as defined on pages 2-77 and 2-93 (footnotes) of NWSOH No. 1, omit the group entirely. Also change i_x in the group i_Ri_xhVV in accordance with Table 2.5, page 2-13, NWSOH No. 1.

The "Transmission Details", column 70, would be very useful in checking communications problems, if it were consistently filled-in. There is also a section on the back of the form entitled "Communications Difficulties". Please be sure your radio officer knows about these entries, and also has the opportunity to see the Mariner's Weather Log.

STREP AND STORM RADIO WEATHER REPORTS

Pages 1-9 and 1-10, NWSOH No. 1. These are very important flags for your weather reports and we are approaching the time of year where they will be used. STREP tells the forecaster something you have observed doesn't fit the forecast. STORM can be used for either tropical or non-tropical storms.

COMMERCIAL COMMUNICATIONS

We still have some ships that are collecting their weather messages for the day and "dumping" them all at one time on a commercial station.

First, collecting several messages defeats the purpose of synoptic weather observations. Synoptic may be thought of as a "snapshot" or a photograph of the world's weather all at the same time. Weather messages are urgent information needed for the current weather analysis and forecast.

Second, we are paying for several observations but getting only one good observation. The rest are historical climatology and are available when the form is mailed.

Finally, with a limited budget, this uses money intended for other marine programs. Please explain this to your radio officer.

NEARSHORE OBSERVATIONS

We have requested that you continue reporting weather until you enter the harbor if you can. We need more observations closer to land. Those of you who are reporting nearshore, we thank you. You are proving that land station observations frequently tell very little about conditions at sea.

THE PRIDE OF BALTIMORE

The PRIDE of BALTIMORE is a replica of the old Baltimore clipper sailing ships. I recruited it into our Cooperative Ship Program (CSP) on August 4, 1982. The PRIDE is a significant entry into our program because it doesn't have CW radio and most of its voyage down the East Coast, through the Panama Canal and up the West Coast will be in the nearshore zone (within 100 miles offshore).

The Coast Guard has agreed to test a new system of receiving synoptic weather reports in alpha-numeric form over voice single sideband radio. When the PRIDE message is relayed to the National Meteorological Center (NMC) it will be no different from a high seas weather report. It will be used in the NMC computer guidance products and enter the data base at the National Climatic Center (NCC) where it will contribute to the development of marine climatologies and other studies.

The Editor's Desk

SATELLITE DETECTS DROP IN SUN'S ENERGY; POSSIBLE FACTOR IN WEATHER ON EARTH

An 18-mo decrease in the Sun's energy output, recently detected by a NASA satellite, may have been a factor in this year's unusually harsh winter, according to a scientist at NASA's Jet Propulsion Laboratory, Pasadena, Calif.

This winter's severe weather conditions in the United States, coupled with results from an experiment on the Solar Maximum Mission Satellite, may be the first direct observation of a cause and effect relationship between the Sun's energy output and changes in Earth's weather and climate.

A persistent decrease of a tenth of a percent in the total amount of solar energy reaching the Earth (called solar irradiance) was detected over an 18-mo period from February 1980 to August 1981 by the Active Cavity Radiometer Irradiance Monitor experiment on the satellite.

This small change in the total energy output of the Sun has great potential significance for the Earth's fragile ecosystem, according to Richard C. Willson, principal investigator and designer of the experiment, a physicist at the Jet Propulsion Laboratory.

Climatologists are already studying the results of the experiment which will be correlated with such global climate indicators as average temperatures, ice coverage, and sea level to evaluate the effects of the drop in solar irradiance.

A systematic increase or decrease in the Sun's release of energy -- as little as one half percent per century -- can produce vast changes in the Earth's climate. Scientists believe that a one percent decrease would lower the Earth's mean global temperature by more than 1°K (2°F). According to some models, a decrease in solar energy of less than 10 percent could effectively freeze Earth's entire surface.

Nearly all life forms on Earth exist within the 10 km (6.2 mi) above and below mean sea level. The temperatures within this thin environmental shell, called the biosphere, are determined by the amount of energy received from the Sun and delicate interactions between the atmosphere, ocean, and land masses.

The climatic effects of short-term variations in solar irradiance are moderated by the heat capacity of the ocean and atmosphere.

A long-term increase or decrease, however, can eventually change the temperature of the ocean and atmosphere enough to change the weather and climate. These kinds of small but persistent trends in solar irradiance are believed to have been causes of climatic changes in the past.

Solar magnetic activity reaches a maximum approximately every 11 yr. The peak of the current solar cycle (called solar cycle 21) occurred in early 1980, about the time the Solar Maximum Mission satellite was launched. The irradiance decrease detected by the monitor may be related to the general decline in solar activity since then. However, the decrease might be an indication of a longer-term trend in the Sun's irradiance. Years of careful measurements would be required to identify such a trend.

In its two years of operation, the irradiance monitor also observed short-term increases and decreases, lasting from days to weeks, in the amount of solar energy that reaches Earth. Analysis indicates the decreases are the effects of sunspots, dark, cooler patches on the Sun, while increases are caused by faculae, which are bright, extra-hot solar regions.

The monitor also detected evidence of solar oscillatory phenomena -- global pulsations whose effects extend deep into the Sun. The oscillations had a 5-min periodicity.

These 5-min oscillations match ground-based observations discovered in the 1970s. Study of this phenomenon, so-called "solar seismology," will provide new information on the inner workings of the Sun that cannot be obtained by other means.

During most of Earth's history, the climate appears to have been considerably warmer, with average global temperatures about 25°C (77°F). The current average global temperature is 15°C (59°F).

A gradual trend to a cooler climate began about 100 million years ago, resulting in the glacial climate of the last 20 million years. At least four major glacial epochs, each lasting nearly 100 million years, have occurred in the last billion years. The last epoch ended 250 million years ago. The present glacial period may yet prove to be another major epoch.

TRANSPORTATION FATALITIES

Fatalities on the United States highways and in all U.S. transportation decreased by 4 percent in 1981, according to preliminary statistics released by the National Transportation Safety Board.

It was the first significant decrease in both categories since the 18 percent drop in 1974 after the first gasoline shortage and introduction of the 55 mph speed limit. The reduction also reversed a 5-yr upward trend in highway deaths.

The highway death toll last year was 49,125 as compared with 51,091 in 1980. In all of U.S. transportation, there were 53,496 fatalities in 1981; in 1980 there were 55,551. Highway fatalities historically account for more than 90 percent of the entire transportation death toll. Passenger cars accounted for 26,555.

More than 53,000 Americans are dying each year in U.S. transportation -- an average of 145 persons every day. Roughly half of those deaths involve the drinking driver, and vast numbers of those lives would have been saved if adult vehicle occupants had been wearing seat and shoulder belts, and children had been provided with proper restraints.

In the marine field there were 196 fatalities in the commercial area, down 2, and 1,400 in the recreation area, up 40, for a total of 1,596 (fig.26).

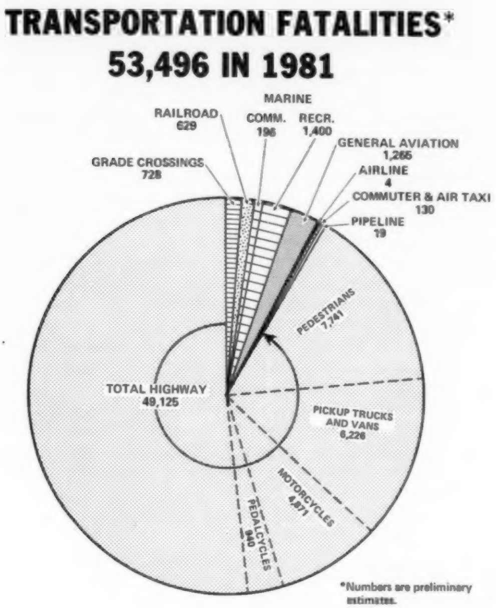


Figure 26.--Pie chart of transportation-related fatalities.

NWS RADIOFACSIMILE SCHEDULE

Effective July 15, 1982, the National Weather Service radiofacsimile schedule from Point Reyes, Calif., NMC, will be as follows.

NOAA NATIONAL WEATHER SERVICE, SAN FRANCISCO, CALIFORNIA, RADIOFACSIMILE TRANSMISSION SCHEDULE

TIME	AREA	CHART
0100Z		
0102	5	PRESSURE FORECAST VT 00Z
0112	5	SEA STATE FORECAST VT 00Z
0122	3	SEA STATE FORECAST VT 00Z
0132	4	SEA STATE FORECAST VT 00Z
0500Z		
0502	5	EXTENDED OUTLOOK
0512	5	00Z PRESSURE ANALYSIS
0522	3	OCEAN THERMAL ANALYSIS
0532	4	OCEAN THERMAL ANALYSIS
1700Z		
1702	3	OCEAN THERMAL ANALYSIS
1712	4	OCEAN THERMAL ANALYSIS
1722	6	12Z TROPICAL ANALYSIS
1732	5	12Z PRESSURE ANALYSIS
2100Z		
2102		FACSIMILE SCHEDULE
2112		EXPERIMENTAL
2122		EXPERIMENTAL
2132		EXPERIMENTAL SATELLITE
2147		EXPERIMENTAL SATELLITE
2300Z		
2302	6	18Z TROPICAL ANALYSIS
2312	5	18Z PRESSURE ANALYSIS

AREA: 3 = 40°N-52°N, EAST OF 135°W
4 = 28°N-40°N, EAST OF 136°W
5 = 30°N-60°N, EAST OF 160°E
6 = 20°S-30°N, EAST OF 160°W

FREQUENCIES (KHZ): 4344.1, 8680.1, 12728.1, 17149.3

Comments on schedule or charts are invited. Write National Weather Service, 660 Price Ave., Redwood City, CA 94063. VISIT US WHEN IN PORT.

WATERSPOUT

This photograph of a waterspout was taken by third officer Jaime B. Rosales. Julius Soileau, Port Meteorological Officer, Houston, Texas, submitted the photograph to the Mariners Weather Log.

The picture was taken October 9, 1981, from the POLAR PARAGUAY at 3.2°N, 100.5°E in the Malacca Strait about 1130 a.m. local time (fig.27).

Figure 27.--Waterspout in Malacca Strait as seen from the POLAR PARAGUAY by 3d Mate Jaime B. Rosales.

HUGE VOLCANIC CLOUD DETECTED OVER HAWAII

A huge cloud of volcanic dust has been detected high over Hawaii by NOAA researchers.

The cloud, report Dr. Kinsell Coulson and Thomas DeFoor of NOAA's Mauna Loa Observatory in Hilo, is nearly a hundred times denser than

a so-called "mystery cloud" observed in January and 140 times as dense as that measured over Hawaii from the eruption of Mt. St. Helens two years ago. It is the densest volcanic cloud detected there since 1973, when highly sophisticated observing instruments came into use.

The cloud reveals itself in spectacular sunsets and sunrises, with unusually intense red and yellow colors. Such clouds are normally invisible to the naked eye in the daytime, but this one is dense enough to give a washed out and milky appearance to the usually clear and deep blue skies of Hawaii.

The researchers believe the source of the new cloud may be the Mexican volcano El Chichon, which is upwind of Hawaii. Further investigation of the high-altitude winds may resolve the question of whether Chichon was indeed the source.

The cloud forms several layers ranging in altitude from 45,000 to 85,000 ft and is superimposed on the older cloud detected in January, so is of more recent origin. Two sets of measurements at the Mauna Loa Observatory, 32 hr apart, showed changes in the character of the cloud with time. The later measurements, made April 11, showed the highest layer had descended by some 5,000 ft and a strong new layer had appeared at a height of 45,000 ft. On April 20, the last observation to date, cloud layers up to 85,000 ft were still detectable over Mauna Loa Observatory.

The measurements are made by a lidar system, which operates by projecting very intense pulses of red light from a ruby laser vertically upward into the atmosphere and measuring the light scattered back by atmospheric particles. The lidar uses red light to detect a dust layer high in the atmosphere much the same way as a radar uses radio waves to detect the position of an airplane.

So far as the researchers know, the Mauna Loa lidar has been the only one of several in the Northern Hemisphere that has detected the cloud. This is because the cloud is presently centered in the northern equatorial region, too far south for most lidar observing stations in the Northern Hemisphere to see it.

MARINE WEATHER REVIEW

The Weather Logs combined with the cyclone tracks, U.S. Ocean Buoy climatological data, gale and wave tables, and mean pressure patterns are a definitive report on the weather systems and primary storms which affected the North Atlantic and North Pacific Oceans during this 3-mo period. Hurricane Alley lists and describes tropical cyclones worldwide. Unless stated otherwise, all winds are sustained winds and not gusts; all times are G.M.T.

North Atlantic Weather Log

January, February and March 1982

WEATHER LOG, JANUARY 1982--It appears there were the usual number of cyclones that affected the shipping lanes. Some were very severe. The primary mean storm path originated near Cape Hatteras and split with one branch paralleling the coast to Newfoundland and into the Labrador Sea. The other branch was east-northeastward to 40°N, 45°W, then northeastward toward the Denmark Strait. There was a secondary track across Scotland to Scandinavia. These closely paralleled climatology except the early part of the second branch which traced farther east and south than normal.

The mean pressure pattern had a near normal configuration but shifted southward. The Icelandic Low at 1000 mb was near 54°N, 40°W, about 400 mi south of its climatic location. A trough line extended southwestward along the North American coast, southward along 38°W, and another northeastward toward another 1005 mb center over the Barents Sea. The Azores High (1023 mb) was 3 mb higher than normal at 34°N, 16°W, about 450 mi northeast of its normal position. There was a second 1023-mb center over Romania (fig. 28).

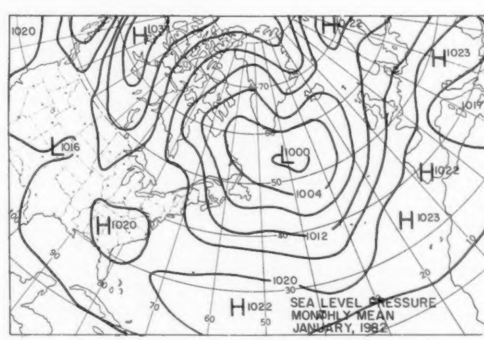


Figure 28.--January mean sea-level pressure.

There were many anomaly centers, the largest plus 8 mb north of Kap Farvel. A minus 7-mb center was south of Cape Chidley, and a minus 6-mb center near 49°N, 32°W.

The upper air flow at 700 mb was zonal between latitudes 30° and 50°N from the East

Coast to about longitude 35°W where it turned northeastward. There was an accentuated ridge from Spain to Iceland and Greenland.

Extratropical Cyclones--The first severe storm of the month was described in the December 1981 Weather Log as it originated in December. This was the new storm mentioned in that writeup that was over Sable Island on the 3d. It had formed over Cape Hatteras on the 1st. At 1200 on the 2d a ship found 20-ft seas and 33-ft swells off Nantucket. At 1200 on the 3d the storm was 988 mb. The OVERSEAS MARILYN (39°N, 60°W) had 50-kn winds and 28-ft waves. The AMERICAN ARGOSY 2° longitude west had 48 kn and 31-ft waves. The storm center jumped about 600 mi in 12 hr and was 986 mb near 39°N, 45°W at 0000 on the 4th. Storm-force winds and waves up to 20 ft continued as the storm turned northeastward. The GBVV (41°N, 30°W) had 52-kn winds from the southwest with 26-ft waves. Heavy rains fell in the York area of England.

The storm started deteriorating into multiple centers on the 7th but storm winds still persisted north of the center in the easterly flow. By the 9th this center was gone.

This LOW formed at the point of occlusion of a storm over Newfoundland on the 9th. There was a strong pressure gradient from coast to coast over the primary shipping lanes. At 1200 on the 10th this storm was 976 mb near 52°N, 30°W. Several ships had winds near 50 kn and waves near 25 ft. The CAST PETREL (46°N, 26°W) had 50 kn and waves of 41 ft. On the 11th the LOW was weakening, about as fast as it intensified. ROMEO had light winds but the swell waves were still 20 ft. By the 12th the storm had disappeared. Wales was virtually cut off from the rest of Britain by snow in the worst winter weather in 20 yr. Rivers flooded due to ice blockage in Poland. On the continent snow halted or delayed ground and air transportation.

A frontal wave off Florida on the 9th was the origin of this storm (fig.29). On the 10th it had raced up the coast to near Cabot Strait at 964 mb. At 0600 the JOHN CABOT was at 38°N, 68°W with 60-kn westerly winds and 21-ft waves. By 1800 several ships were reporting 50- to 60-kn winds and high waves. Among them were the SEA-LAND PIONEER, WVFN, and KRTB. The DART CANADA (46°N, 54°W) registered 65-kn winds and 33-ft swells. Between 1100 and 2000 local time the SEA-LAND PIONEER had 60-kn winds 100 mi south-southwest of Cape Roce. The barometer (fig. 30) dropped to 963 mb at 1300.

At 0000 on the 11th the storm was 954 mb near Belle Isle. Several ships had winds over 50 kn. The Danish ship OYDX at 66°N, 56°W reported 58-kn winds. On the 12th the BERKSHIRE (37°N, 59°W) reported 52-kn winds with waves of 33 ft. The storm was over the Labrador Sea and a second center formed over Baffin Bay with a third center over Denmark Strait. The original center crossed Kap Farvel on the 13th and joined another storm coming from the south. It again intensified to 956 mb. On the 14th a ship near 60°N, 41°W

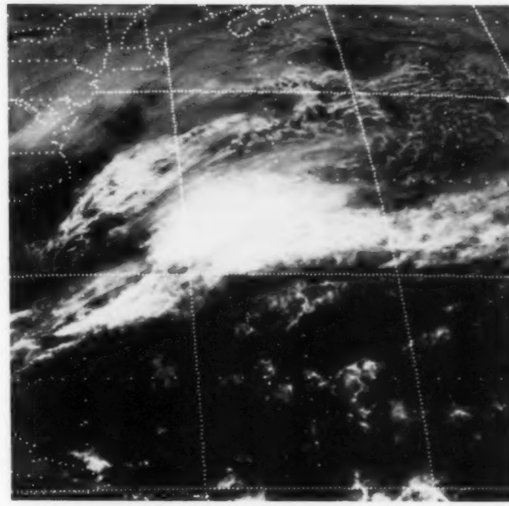


Figure 29.--The storm is starting to deepen off Cape Hatteras at 1700 on the 9th.

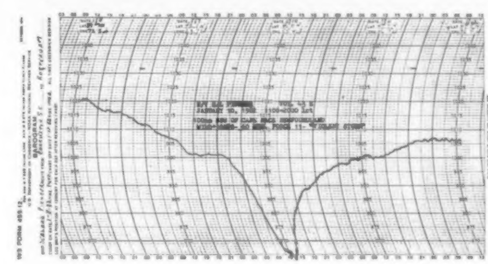


Figure 30.--The SEA-LAND PIONEER was very near the storm's center at 1300.

reported 72-kn winds. Other ships near the Shetland Islands had storm force and higher winds. The storm quickly died as another farther north developed and moved to the Barents Sea. Mike measured winds of 55 kn and seas of 21 ft in this storm.

A frontal wave was analyzed 800 mi northeast of Bermuda on the 12th with the aid of two ship observations. It traveled northeastward. On the 13th the RESOLUTE (39°N, 53°W) had 41-ft swell waves. The LYNTON GRANGE (41°N, 46°W) in the same northwesterly flow on the 14th had 52-kn winds and 30-ft waves. On the 15th the storm was 976 mb near 55°N, 23°W. The VALDIVIA had 60-kn winds 300 mi southwest of the center and the DART AMERICA 52 kn with 30-ft waves in about the same relative position to the center. The storm weakened on the 16th as it moved over Iceland and into the Greenland Sea.

Monster of the Month--The Gulf of Mexico produced this LOW on the 13th. There were some minimal gales as it traveled eastward. At 0000 on the 15th it was off Cape Hatteras at 982 mb and

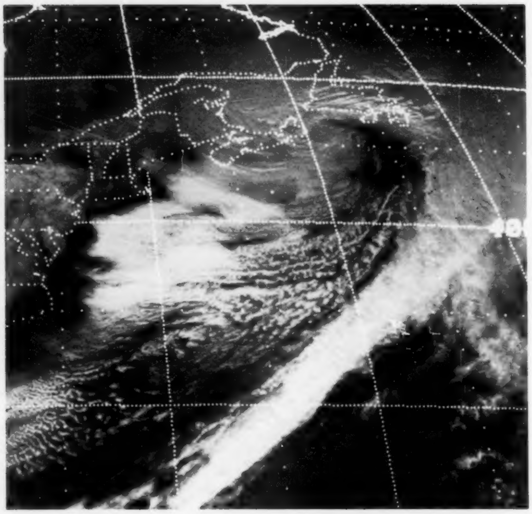


Figure 31.--This satellite image shows the storm at 1700 on the 15th.

started an explosive deepening. It was 968 mb 12 hr later near Halifax, Nova Scotia, and was 952 mb at 0000 on the 16th (fig. 31). At 0000 on the 15th buoy 41002 measured 40-kn winds and 21-ft seas. Two ships reported 50-kn winds. The winds and waves increased as the day progressed. The CRYOS (49°N, 58°W) had 65-kn easterly winds and the RIGG at 44°N, 60°W measured 60-kn winds and 39-ft swells. The J. LOUIS (40°N, 64°W) had only 48-kn winds but the seas were 34 ft with 38-ft swells. The TFL JEFFERSON lost 89 containers overboard about 825 mi east of Cape Race in heavy seas and force 12 winds.

There were many wind reports over 50 kn on the 16th. The KRTB had 67 kn, the RUBENS 83 kn, and the ERIKA JACOB waves of 49 ft. On the 17th the storm was 960-mb with two centers and the highest winds near 60 kn. The SEA-LAND GALLOWAY found 51-ft swell waves near 46°N, 36°W. Only a few miles away the VALDIVIA had 60-kn winds. By the 18th the first center dissipated and the second center moved northward toward Iceland. There were still high swells which slowly decreased.

As the previous storm moved across Newfoundland a frontal system with waves moved across the Great Lakes. Late on the 16th one of these became unstable and expanded. The front crossed the U.S. East Coast early on the 17th. Late in the day there were some 50-kn winds reported offshore. By 1200 on the 18th the storm was 952 mb near Cartwright. There were many wind reports near 50 kn as far south as latitude 35°N and east to longitude 45°W. The highest report that day was 65 kn with 39-ft waves by the DART ATLANTIC near 47°N, 50°W. There were three other reports of 60 kn.

The storm was drifting slowly eastward on the 19th at 960 mb. The Danish ship OYDX was near Sondre Stromfjord at 1200 with 72-kn northerly winds. Other ships in the vicinity of 45°N were receiving the strongest winds. Winds up to 50 kn and waves to 25 ft continued into the 21st as the storm weakened. High pressure of 1050 mb over northern Greenland kept the northern gradient tight and the MEERKATZE in the Denmark Strait had 58-kn northeasterly winds and 25-ft seas. The low center disappeared on the 22d.

Another rapidly deepening storm, a gift from Cape Hatteras, developed on the 20th. It raced east-northeastward and had started deepening by 1200 on the 21st. The Netherlands ship PDHU (39°N, 48°W) was within 3 mb of the 986-mb center with 50-kn southwesterly winds. At 0000 on the 22d the storm was 954 mb at 45°N, 45°W. The KING GEORGE (45°N, 41°W) was fighting 64-kn southwesterly winds and 43-ft waves. By 1200 the central pressure was 950 mb. CHARLIE had 62-kn southeasterly winds and 34-ft seas. The WVFN had 64 kn 6 hr earlier. At 1500 CHARLIE measured 68 kn, 1800 -- 70 kn with 46-ft waves. By 0000 on the 23d the winds had dropped to 50 kn but the seas were still 33 ft with 49-ft swells. The storm was rapidly deteriorating as another moved through the southern semicircle.

The first part of the last week of the month there were three storms that affected the shipping lanes. As the previous storm moved northward a frontal wave developed near 37°N, 50°W between large high pressure areas over Quebec and Cape Finisterre. Wind and pressure reports from three ships, GPUQ, GUVD, and KSLB pinpointed its development and position. On the 23d there were winds with this storm up to storm force and waves up to 25 ft. The western HIGH was weakening and shifted southward as a LOW pushed eastward on the 24th. The VRKC had 52 kn and 20 ft. Southerly gales were blowing off New England. The KING WILLIAM (38°N, 40°W) had 30-ft waves. The GVHY (44°N, 58°W) had southerly 55-kn winds with the western storm. The BISCHOFSTOR south of the northern LOW had 34-ft swells.

Several ships had winds over 50 kn with the western storm on the 25th, including the TROLL PARK (44°N, 53°W) with 30-ft waves. Fishing vessels near Iceland had winds near 50 kn but as usual did not report wave heights. LIMA reported 21-ft waves. The CAST WALRUS lost 70 containers overboard on the 26th in sleet, hail, and rain in force 12 winds. Winds around the southern LOW were generally gales but there were high swell waves up to 33 ft. The western storm was drifting northward, the southern storm was stationary, and the northern storm was moving eastward bringing high winds to the North Sea and Norwegian Sea. On the 27th all three were no longer of concern.

An inverted trough paralleling approximately 15°E longitude had been over the central Mediterranean for several days. By the 24th a low center had formed southeast of Sicily near 36°N, 16°E. The NEDDRILL I between Malta and Tunisia had 35-kn winds and 18-ft seas from the northwest. The JOELLE sought shelter at Minorca because of heavy seas and force 8 winds. By 0000 on the 25th the

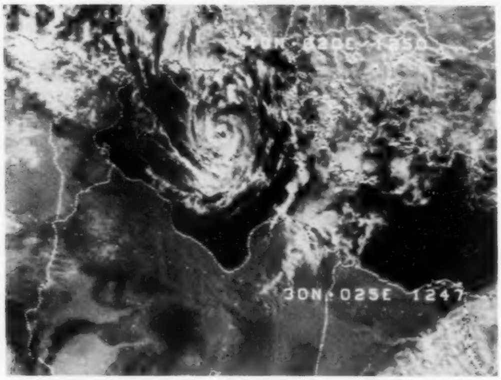


Figure 32.--There appears to be an eye at the center of the storm at 1249 on the 25th.

LOW was 994 mb and quasi-stationary. By 0600 on the 25th the winds were 40 kn. At 1200 the CHARLES PIGOTT in the eastern sector of the storm had southerly 35 kn (fig. 32). The FOSS DUNKERQUE (37.2°N, 18.4°E) had 48-kn northeasterly winds at 1200 on the 26th with a pressure of 1000.8 mb. At 1500 the winds were southeasterly at 50 kn near 36.9°N, 19.5°E with a pressure of 1000.4 mb.

There has been some consideration given that this storm had tropical rather than extratropical characteristics. According to land stations the LOW was being analyzed near 1005 mb but ship pressures offshore indicated a lower central pressure with higher wind speeds near the center. At 1200 on the 27th a report from the EUROBRIDGE BEAM (36.3°N, 20.3°E) had 52 kn northwest winds and 999.7 mb.

The storm was over Greece on the 28th and no indication of gale-force winds.

Casualties--Fog was the culprit in the following casualties: ALBEAL PRIMERO, BELL RULER, BORNO, FEDERAL RHINE, GERTRUD, IGRIM, LODZ, ROUNTON GRANGE, SHAO XING, and VELSK. These ships suffered ice damage: ANJA LEONHARDT, BALSA VI, BATROUN, EMPROS, FAETHON, KARLSVIK, MATHILDA DESGAGNES, MING WINTER, and THEDDEGMON.

High winds were specified as the cause of these casualties: ARHON, ASPASIA, BORE QUEEN, CORBANK, HONG MING, PEGASUS, QUEEN ELIZABETH 2, SARRAT, SUFFOLK ENTERPRISE, and the TFL JEFFERSON.

The following ships had unspecified heavy weather damage: ALPAMAYO, AL-TAHA, ARAPAHO, CAVALA, CAST WALRUS, CONTI HOLLANDIA, COURSON, EL AMIR FAHD, ESTRELLA, FAST ONE, FAST TWO, GENERAL GUISAN, GOLDEN OAK, HEREND, JOELLE, JOZEF CHELMONSKI, LUHESAND, MARITIME HAWK, MINERVA, MOON FISH, OCTONIA SUN, PIURA, PRODUCT PRINCE, SAN GEORGE, TELEMON, and TRANS LINK.

WEATHER LOG, FEBRUARY 1982--The cyclone track chart indicates there were less than the normal number of cyclones over the ocean. Many of those that occurred were severe. Smaller cyclones and frontal waves were rapidly absorbed by the larger ones and only those that persisted for more than 24 hr are plotted. There were two primary tracks that joined into one. One was eastward across the southern United States, then northeastward to east of St. John's, Newfoundland. The other was out of the Gulf of St. Lawrence to join the first east of St. John's, then a combined track to Iceland and beyond. One storm formed southeast of Cape Race and tracked to the eastern Mediterranean.

The mean pressure pattern was much more intense than normal. The Icelandic Low was 20 mb lower than normal at 983 mb near 60°N, 33°W, and the Azores High was 6 mb higher than normal at 1026 mb near 30°N, 39°W. Pressure over eastern Europe was higher than normal with a 1026 mb HIGH over Poland rather than a 1016 mb ridge. Pressure was also higher over the United States (fig. 33).

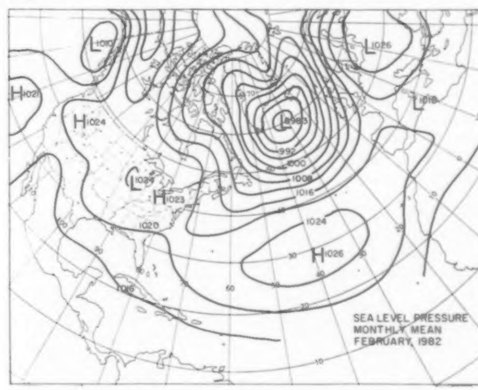


Figure 33.--February mean sea-level pressure.

Two large anomaly centers were particularly associated with the marine weather. The most significant was the minus 21 mb near 60°N, 30°W associated with the Icelandic Low, the other was plus 7 mb with the Azores High. A plus 11 mb center over Poland and a plus 5 mb center over the United States had more indirect effect on the marine storms. Weather is a continuous phenomena so none can be disregarded. Generally the area north of a line from Lisbon to Cape Race and between the Irish Sea and Labrador was negative.

The upper-air flow was zonal between 30° and 60°N from North America to approximately 30°W, then northeastward over a ridge centered about 15°E. There was an anomalous low center over the Icelandic Low. The gradient was much tighter than normal producing stronger winds.

Extratropical Cyclones--This first storm of the month passed over Newfoundland on the last day of January. The KRTB drilling near the Virgin Rocks measured 50-kn winds. The WVFN and VOBJ had 58 and 55 kn, respectively. CHARLIE had 26-ft waves. By 1200 on the 1st the 972-mb LOW was near 51°N, 35°W. The TFL JEFFERSON (47°N, 36°W) had 60-kn winds with 33-ft waves. Other ships in the area verified the report with winds over 50 kn and waves of 33 ft. By 1200 on the 2d the storm had weakened slightly with winds less than 50 kn but

still high swell waves. The MONSOON (49°N, 30°W) reported 34-ft and the BARON KINNAIRD (44°N, 23°W) had 39-ft swells.

On the 3d another LOW was racing eastward along latitude 48°N and absorbed this LOW. This new LOW had passed over Newfoundland on the 2d bringing winds as high as 60 kn and waves up to 33 ft to ships in the area. The VOBJ measured 60 kn at 1800 and the AMERICAN MONARCH (44°N, 42°W) 33-ft seas. The RAVENSCRAIG (40°N, 43°W) had 65-kn winds from the northwest and 49-ft waves at 0600 on the 3d. By 1200 there was only one 969-mb center near 54°N, 25°W (fig. 34). There were many storm-force reports except in the northern semicircle. The ANTONIA JOHNSON (41°N, 15°W) reported 72-kn winds on two observations. The BARBER PERSEUS (38°N, 40°W) measured the waves as 43 ft. On the 4th the LOW was turning from northward to westward. The winds had quieted somewhat but there were still swell reports up to 39 ft mostly west of the front. On the 5th a LOW broke off the trough near the Canary Islands. Another LOW was racing eastward along 55°N. The original LOW was stationary off the coast of Greenland through the 6th. The following vessels probably suffered their heavy weather damage in this storm: AMBER PACIFIC, AMELIA TOPIC, ATLANTIC PREMIER, CAST WALRUS, and TFL JEFFERSON.

Figure 34.--The upper-air center was near 54°N, 27°W about 1430.

On the 5th there was a large HIGH over the Great Plains and another over the mid-Atlantic. This LOW formed at 1021 mb between the two over Lake Erie. By 1200 on the 7th the storm was 961 mb near 52°N, 47°W, a drop of 49 mb in 24 hr. Ships between 40° and 50°N and 47° to 52°W found winds of 45 to 50 kn. The platform KRTB measured 56 kn. The storm center passed within a few millibars of the CAUCASUS MARU (54°N, 36°W) at 1800, which had 58-kn winds and 33-ft seas. At 0000 on the 8th the storm was 952 mb. CHARLIE measured 62-kn winds with 36-ft seas which were 46 ft at 0600. By 1200 the pressure had continued to drop to 932 mb at 63°N, 28°W (fig. 35). LIMA measured 58-kn winds and the SLETTBAKUR reported 68 kn north of the center with 951 mb. The central pressure had risen to 937 mb as it moved over Iceland on the 9th. Icelandic ships were the primary source of information with winds of 50 to 60 kn. The LEXA MARSK (63°N, 15°W) reported 46-ft waves. The wind decoded as 116-kn but was probably 60 kn and the wrong wind indicator used. LIMA had 28-ft waves. A trough was swinging past 40°W and several ships had winds over 50 kn and waves over 30 ft.

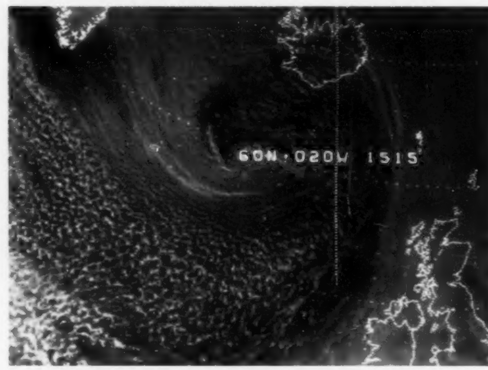


Figure 35.--The clouds are not well illuminated due to the low Sun angle in this visual image. The central pressure of this extratropical storm is lower than many hurricanes.

As the original LOW moved northward another center developed in the trough east of Kap Farvel. This LOW turned northeastward over the Norwegian Sea.

This surface LOW formed under the influence of a short wave and cold advection aloft. It raced eastward under high zonal winds. There were wave reports up to 25 ft early on the 11th. By 1200 the storm was 976 mb near 49°N, 38°W. Ships and the drilling platforms off Newfoundland had winds over 50 kn. The MANCHESTER CHALLENGE had 60-kn westerly winds and 39-ft waves at 1800. Storm-force winds were prevalent on the 12th. The SAMARIA (49°N, 16°W) radioed a 54-kn wind report with 46-ft waves. ROMEO had 33-ft waves. The SEA-LAND McLEAN was sailing along latitude 59°N on the 12th. Her barograph (fig. 36) and log showed she sailed very nearly through the center of the storm with a minimum pressure of 956 mb. Her winds shifted from south to east-northeast to north over a 6 hr period with force 8 from the north.

The 21,032-ton VICTORY (fig. 37) broke in two early on the 12th while about 500 mi north of the Azores in winds of 60 kn and swell waves up to 50 ft. Fifteen crewmen were lost but 16 clinging to the stern of the tanker were rescued. The storm passed east of Iceland on the 13th traveling northeastward. It brought winds of 50

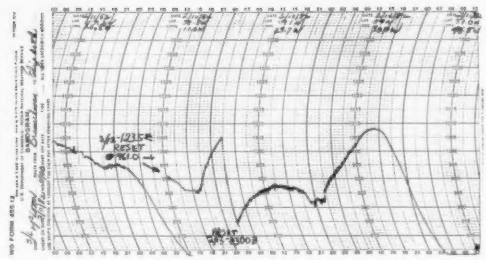


Figure 36.--The barogram from the SEA-LAND MCLEAN. Many thanks to Capt. Prinderville for this and extracts from the log.

Figure 37.--The stern of the tanker VICTORY that broke in two in heavy seas of this storm. A helicopter rescued 16 crewmen. Wide World Photo.

kn and high seas to the northern North Sea platforms. It moved into the Barents Sea on the 14th. The KILDARE and RANI PADMINI reported weather damage during this period.

A trough moved across the Maritime Provinces on the 12th and a LOW developed offshore on the 13th. By 0000 on the 14th it was 976 mb near 48°N, 29°W. The DART AMERICA found 70-kn winds from the west about 180 mi south of the center. The C.P. AMBASSADOR had 80 kn out of the northwest about 150 mi southwest of the center at 0600. It appeared no one was venturing out to check the wave heights.

The storm turned southeastward later in the day and headed for the warmer climate of the Mediterranean. The storm was weakening, but the ATLANTIC SPAN (45°N, 20°W) in the northwest quadrant had 58-kn winds and 33-ft seas. The storm was over the Mediterranean Sea on the 16th and a French ship had 46-kn easterly winds in the Gulf of Lyon on the 17th. It dissipated on the 19th.

Monster of the Month--The Gulf Stream nourished this storm. It was first analyzed near Mobile late on the 12th. As the storm moved over the Gulf Stream it intensified. By 1800 on the 13th it was off Cape May and a British ship was very near the center with 60-kn southwesterly winds. The ROBERT E. LEE found 70-kn easterly winds near 40°N, 53°W at 0000 on the 14th. By 1200 the storm was 962 mb off Nova Scotia. The ROBERT E. LEE now claimed the winds were 91 kn out of the south with 26-ft waves near 40°N, 50°W, and the RIGG near 44°N, 58°W claimed 80 kn from the northwest with 33-ft seas. There were many wind reports over 50 kn. The KRTB radioed a 72-kn wind report and 33-ft seas at 0000 of the 15th. The SEA-LAND McLEAN had force 12 winds on the 15th with the vessel pitching and rolling in "mountainous swells." The pressure dropped to 960 mb (figs. 38 and 39). The winds decreased later on the 16th as the circulation spread and eased the gradient. CHARLIE had 26-ft swells. On the 17th a LOW moved southeastward out of Labrador and by the 18th this storm was gone. There were two tragedies associated with this storm. The drilling platform OCEAN RANGER capsized and sank in winds up to 70 kn and waves of 50 ft early the morning of the 15th (fig. 40). The platform was abandoned when it started to list. It sank some hours later. All 84 aboard were lost in the violent icy sea.

On the afternoon of the 15th the Soviet freighter MEKHANIK TARASOV developed a 45° list while about 65 mi east of the OCEAN RANGER. The winds in this area were reported as 90 kn with

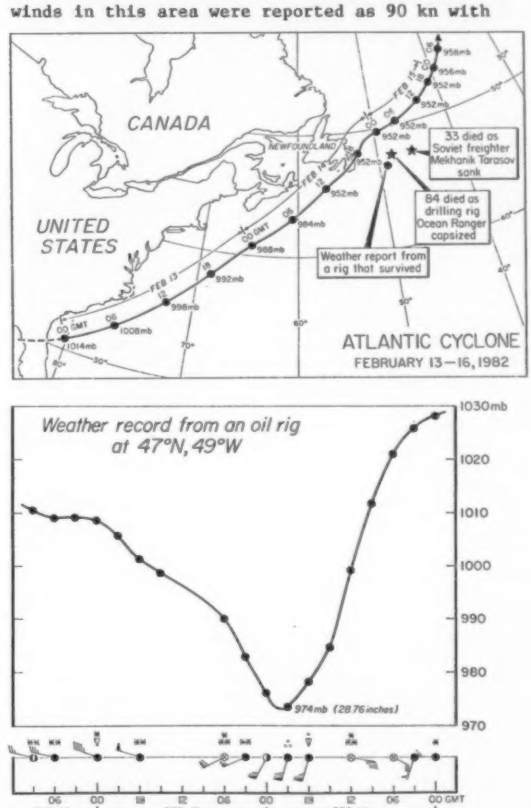


Figure 38.--The track of this vicious storm with 6-hr pressures, and the weather record from a nearby oil rig (47°N, 49°W). A total of 117 deaths resulted from this storm. From Storm Data, Feb.1982, prepared by Prof. T.T. Fujita, University of Chicago.

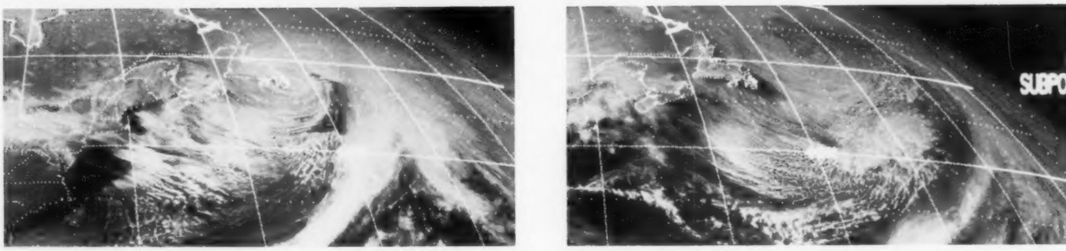


Figure 39.--Satellite visual image for 1700 on the 14th (left) and 1700 on the 15th (right).

Figure 40.--A 1981 file photo of the OCEAN RANGER. Wide World Photo.

50-ft waves. The freighter refused offers of help while awaiting arrival of another Soviet ship. She sank early on the 16th prior to arrival of the other ship. Five survivors were picked up and 33 crewmen were lost.

This LOW came off the eastern slopes of the Canadian Rocky Mountains and was over James Bay on the 15th. By 1200 on the 17th it was 970 mb near 49°N, 40°W. The SIR HUMPHREY GILBERT (47°N, 45°W) had southwesterly 60-kn winds and 20-ft seas. At 0000 on the 18th the storm was 958 mb near 53°N, 39°W. CHARLIE measured 963 mb and 20-ft waves. The report from the ATLANTIC PRELUDE was 87 kn winds but it appeared this was another case of coding and the speed was doubled on conversion to knots. Several ships found winds of 50 kn or greater on the 18th including the AMERICAN LEGEND and also several reports of waves over 25 ft. The biggest problem was with waves of 20 to 30 ft on the 19th. CHARLIE had 23 ft and LIMA 20 ft. The storm moved northward into the Denmark Strait where it stalled on the 21st and was absorbed by another system on the 23d.

This storm formed over Virginia on the 21st. It deepened rapidly over the warm Gulf Stream into an intense small storm but there were no high wind reports. Later on the 22d it became the center of a large circulation as an earlier LOW dissipated. The winds were mostly less than gale force as the storm consolidated the large circulation. At 1200 on the 24th the pressure was 972 mb over Newfoundland. At 1800 the strong wind reports started coming in. The RIGG at 44°N, 58°W had 60-kn winds out of the west. At 0600 on the 25th the WVFN also had 60 kn. A station on the southwest tip of Newfoundland had 60 kn. The TITUS (48°N, 50°W) reported 59 kn with 20-ft waves. The DOLORES T. JANDA sank in heavy seas off Labrador. The 14 crewmembers were rescued.

Two frontal waves moved into the southern semicircle on the 26th and the higher winds of 45 to 50 kn were temporarily associated with these. The eastern waves continued to develop and became the primary storm on the 27th. Winds of 45 to 60 kn and waves of 20 to 33 ft were reported in the southern semicircle of the storm. CHARLIE had 34-ft swells on the 28th. The ARCTIC TROLL many miles to the southwest (42°N, 46°W) had 30-ft swells. On March 1 ROMEO measured 30-ft seas with 51-kn winds. Following the reports from the LEXA MARSK it was fairly obvious she was using the wrong wind indicator code (speeds up to 132 kn). The reported code was probably 0 or 1 (m/sec) but actually reporting in knots and should use 3 or 4.

The storm was deteriorating fast on the 2d as another approached from the southwest absorbing most of the energy.

Casualties--Fog was involved in the following casualties: ADRIATIC FREEZER, AFRICAN PIONEER, ALTENBURG, ANNE SOBYE, ASTRAMAN, CARBAY, DELTA NORTE, MOSEL, POSEIDON, PRINS HENRIK, ROGNES, THEODORA (fig. 41), and VINGA POLARIS. These ships suffered damage in ice: CAROLINE OLDENDORFF, EASTERN FRIENDSHIP, SILKE RIEDNER, ZACAPA, and ZUIDWAL. Stormy weather including blizzard conditions resulted in five casualties in 3 days in the Bosporus. They included the CHERNIGOV, GEOGRAKIS MALLIS, IZHORA, MOCHOBEC, and SOVETSKAYA PROFESI.

The OCEAN RANGER and MEKHANIK TARASON sank off Newfoundland on the 15th and 16th, respectively.

The following ships reported weather damage during the month: ALPAMAYO, C. TAHSIN, CRAIGANTLET (fig. 42), GENERAL LIM, GERMA DOLPHIN, GLYFADA SUN, JARAL, KAGHAN, KYROS, LADY RHODA, MINERAL LUXEMBOURG, MENELAOS, MONTAIGLE, NARISSA, OCEANIC ENERGY, PORTELOIS, RATNA SHOBHANA, SAN NICOLAS, SUSSEXBROOK, TINOS, VARI, and WESTERN CONDOR.

Figure 41.--Tug boats are working to free the coal ship THEODORA, which went aground in fog at the entrance to Baltimore harbor. Wide World Photo.

Figure 42.--The container ship CRAIGANTLET went aground in heavy seas on the Clyde coast of Scotland. Wide World Photo.

Other Casualties--The South African PRESIDENT KRUGER and the supply ship TAFELBERG collided in stormy weather and seas about 100 mi from Cape Town on the 18th. The PRESIDENT KRUGER sank with 180 of 184 crewmen reported rescued.

WEATHER LOG, MARCH 1982--There were the usual number of cyclone tracks over the shipping lanes, but they were more intense than the normal. The tracks were shifted eastward resulting in a secondary track across northern Scotland. There was a primary track eastward from the U.S. East Coast to about 50°W where it turned northward toward the Denmark Strait. Another primary track moved over the Great Lakes and the Maritime Provinces joining the first track near 53°N, 40°W. A climatological primary track through the Davis Strait was missing.

The monthly mean sea-level pressure was more intense than the normal and shifted northeastward. The Icelandic Low was 993 mb, 9 mb lower than the normal, and shifted 400 mi northeastward to 64°N, 30°W. The Azores High at 1026 mb near 36°N, 30°W was 6 mb higher and 600 mi northeast of its normal position. The pressures were generally above normal south of latitude 53°N and below normal north of that latitude over the oceans (fig. 43).

The ocean area was mainly covered by two large anomaly centers, a minus 15 mb on the Greenland coast near 68°N, and a plus 11 mb near 40°N, 32°W.

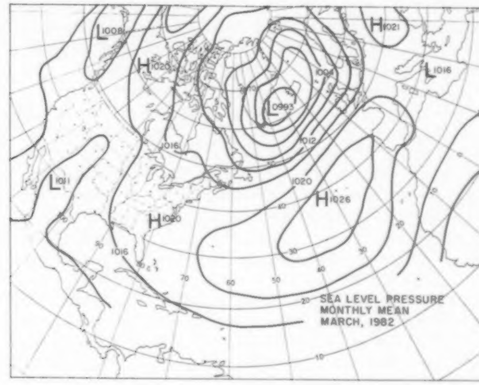


Figure 43.--March mean sea-level pressure.

The upper-air gradient at 700 mb was tighter than normal, meaning stronger flow at that level, which would result in faster speeds of the storms in general. The flow was mainly zonal with a wide trough over the North American east coast and a ridge along the west coast of Europe.

There were no tropical cyclones.

Extratropical Cyclones--This frontal wave came off the East Coast over Cape Hatteras on the last day of February. It raced northeastward and a ship at 44°N, 32°W had 45-kn winds with 23-ft seas. By 1200 on the 2d it was approaching LIMA. The winds were gales but the swell waves were 20 to 28 ft. The INDIANAPOLIS struck a bridge at Southampton when 68-kn gusts caught her while attempting to berth. At 0000 on the 3d the storm was 956 mb near the Outer Hebrides. High wind and wave reports poured in from the North Sea with several up to 60 kn and 30 ft. The DRAGON lost containers overboard in the English Channel. The AEGIS DORIC had to divert to Vigo to restow cargo. The AMERICAN ACCORD in the western quadrant of the storm (56°N, 28°W) had 45-kn winds and 33-ft waves. On the 4th the storm moved over Norway and by midday was no longer of concern to mariners.

This storm formed over Maine on the 2d. It developed rapidly and the LONDON VOYAGER and ATLANTIC SPAN on opposite sides of the front had winds near 50 kn. On the 4th the ATLANTIC SPAN (45°N, 49°W) reported 72-kn northwesterly winds with 23-ft seas. At 0000 on the 5th the storm was 964 mb over Kap Farvel. An Icelandic ship south of the island had 52-kn winds from the south and the KOLN EXPRESS (50°N, 38°W) had 55-kn west winds with 33-ft swell waves.

By 1200 another LOW had suddenly appeared south of Keflavik. The AMERICAN ALLIANCE had 23-ft waves near 49°N, 33°W and CHARLIE had 20 ft. This LOW moved northward over the Greenland Sea as the front continued eastward. There were a few North Sea reports near 50 kn. The BOY ALLAN, 50 mi east of Orkney Islands, suffered loss of navigation, engine, and pumps in heavy seas. All crewmembers were rescued by helicopter.

The third significant storm came out of the

southern Midwest. By the 6th it was crossing Labrador and the front had moved off the East Coast. The SEA-LAND ECONOMY (42°N, 50°W) reported 49-ft swell waves from the south-southwest. At 0000 on the 7th the storm was 970 mb near Kap Farvel. At 0600 CHARLIE measured 48 kn with 31-ft seas. The HOFSJOKULL (61°N, 30°W) had 50-kn winds on the 8th. The storm had stalled in the Denmark Strait and frontal waves were moving through the southern semicircle. There were strong winds over the North Sea on the 10th. Some waves were up to 30 ft. There were 20- to 25-ft waves in the southern quadrant between 45° and 60°N. At 0600 on the 11th LIMA had 50-kn winds and 33-ft waves (fig. 44). On the 11th the storm started moving eastward again and was no longer of consequence on the 13th. The ATLANTIC CAUSEWAY grounded near Flushing Roads in severe winds and currents. The RANGA was driven aground on the west coast of Ireland after anchoring with engine failure. All aboard were rescued. On the 11th the storm started moving eastward again and was no longer of conseqence on the 13th.

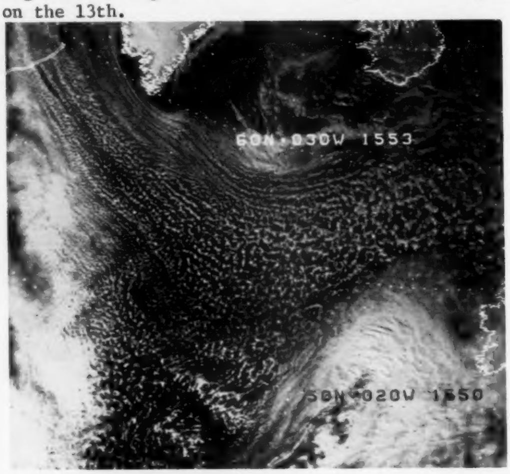


Figure 44.--The storm is southwest of Iceland at 1555 as a frontal wave is moving through the southeast quadrant.

This LOW can be traced back to the south coast of Alaska. It moved over the Labrador Sea on the 12th. On the 13th CHARLIE had strong gales and waves up to 29 ft. The JOEKULFELL (57°N, 35°W) had 52-kn bitter winds at -2°C. On the 14th there were some 20-ft wave reports but the storm appeared to be losing its punch until a ship reported 30-ft swells in the Bay of Biscay on the 16th. The LOW moved into Scandinavia on the 18th. The following dragged anchor in the Flushing area due to force 9-10 winds: MANSOOR, AGIOS NECTARIOS, ESSO CALLUNDA, TOR, FEDERAL HUDSON, STAR SINGAPORE, and BRITISH HOLLY.

There were no exceptionally strong storms the remainder of the month but a couple deserve mentioning. There were cases where individual ships encountered strong winds and/or high waves. These were probably cases of local instability not found by other ships or not at synoptic times.

On the 22d there were several low-pressure centers over or near the ocean. There was also a high-pressure center off Spain. There was a large weak LOW west of the HIGH over midocean. A new low-pressure center formed near Long Island and moved eastward as the midocean LOW moved northward around the HIGH and dissipated. On the 23d the LOW also turned northward as it pushed against the stubborn HIGH. The WOLFE (48°N, 60°W) had 45-kn gales.

By 1200 on the 24th the 980 mb LOW was near 53°N, 41°W. The JUTHLANDIA (48°N, 42°W) found 63-kn winds driving 30-ft seas, and 38-ft swells. A ship at 48°N, 39°W had 34-ft swells. The storm was slightly south of Iceland on the 25th when another center formed north of the Island and became the primary circulation. This storm brought 40-kn winds to MIKE on the 26th.

A fast moving HIGH moved off the mid-Atlantic coast on the 24th. The persistent 1040-mb HIGH was over the North Sea. The western HIGH built over the water and on the 26th the two HIGHs dominated the area from the Black Sea to North America. The European High drifted southward and two low-pressure centers squeezed the Atlantic High into two centers on the 28th.

This was one of the LOWs that squeezed the HIGH. It formed on a front that trailed between the two HIGHs where there is natural cyclonic tendencies on the 26th. There were gale reports on the 27th. The ONDINA (40°N, 24°W) had 48-kn northerly winds with 26-ft seas. The center was drifting southward as a cut-off LOW formed in the upper-air circulation. The storm was centered north of Madeira Island on the 28th at 992 mb. There were some gales and one report of 26-ft swell waves. By the 29th there were no more reports of gales and the storm turned northeastward and disappeared over France on April 1.

Casualties--This was the month of the ice. The following ships suffered ice damage: ADVENTURE, ALEXANDRA S., BOTTENVIKEN, DALIA D., GERMA DOLPHIN, KAPODISTRIAS, LAKESHELL, MARINE NAUTICA, MING SUMMER, MOKSTEIN, NIEDERSACHSEN, and RATNA SHOOBHANA.

The tanker ARKAS collided with three barges and a tug in fog on the Mississippi River. Burning oil flames soared hundreds of feet in the air. All crewmen were accounted for. These other ships were casualties of fog: JINYU MARU, KWIDZYN, LILLE-KAREN, ORIONMAN, OURTHE, PRINSES MARGRIET, QUELLIN, and SPIRIT OF FREE ENTERPRISE.

Strong winds tore the ZAPATA SCOTIAN from its moorings in Halifax harbor on the 5th. It drifted 2 km before six tugs got it under control.

Both these ships encountered "rogue" waves. The BINTANG BOLONG encounter was off Cape Finisterre and the DRAGON was in the English Channel.

These ships had heavy weather damage: AGIOS NICOLAOS IV, ASLAN DENIZ, CIUDAD DE SANTA MARTA, EASTERN SEA, ELEFTHERIOS, GLORIOAS, GOLDEN PHOENIX, IASON, JFPTHREE, MARIA, MARIA K., NIKOS NASON II, NUOVO TINNUS, SCAPTRADE, SUDURLAND, and VASILIOS IV.

North Pacific Weather Log
January, February and March 1982

EATHER LOG, JANUARY 1982--There were more than the usual number of cyclones over the water this month. The major paths were near normal but slightly shifted in some areas. One of the major paths was eastward from near Tokyo to midocean, then northeastward into the Gulf of Alaska. A second path branched off from the first one near 160°E toward Norton Sound. Another primary path paralleled the Kurile Islands into the western Bering Sea. Yet another less concentrated path crossed the northwest U.S. coast from the southern Gulf of Alaska.

The mean sea-level pressure pattern was nearly a tracing of the normal (fig. 45), except for central pressures. The Aleutian Low was 1003 mb near 46°N, 170°E, 4 mb higher than normal and 3° latitude to the south. The Pacific High at 1024 mb at 33°N, 135°W was 4 mb higher than normal and about 200 mi northwest of its mean position. There was a second 1005 mb climatic low over the Gulf of Alaska near 55°N, 148°W. The most anomalous feature was the usual High over the Yukon at 1031 mb which was 9 mb higher than the mean. This effectively blocked storms over most of Alaska.

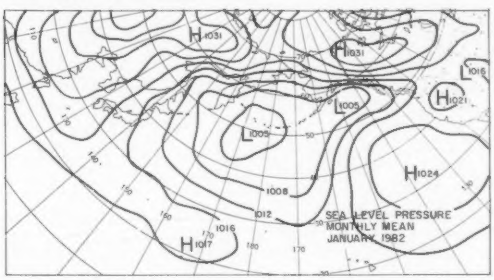


Figure 45.--January mean sea-level pressure.

The majority of the ocean basin had positive anomaly values. There were two significant anomaly centers, the plus 9 mb over Yukon, Canada, and a plus 7 mb off the Oregon coast near 47°N, 143°W.

There were no surprises in the upper air pattern. The flow was zonal between latitudes 20°N and 50°N from Asia to 180° where there was waving to the coast of North America. The primary circulation Low was northwest of the Sea of Okhotsk. There was a trough along the Asian coast and another from Kamchatka to 20°N, 170°W. A ridge line approximately paralleled 145°W connecting two small high centers.

There were no tropical cyclones.

Extratropical cyclones--The wind direction, barometric pressure and tendency from three ship reports were the primary factors in identifying the formation of this LOW on the 3d. At 1200 on the 4th the JAPAN ACE was 300 mi south of the center near the front with 45-kn west winds. She was reporting 20-ft swells in the southwest quadrant 12 hr later. At 0000 on the 5th the storm was 984 mb near 35°N, 174°W. The YASHIMA MARU was now near the same relative position to the center as the JAPAN ACE earlier and found 50-kn west winds and 16-ft waves. A ship in the western quadrant had 45 kn.

On the 6th the storm was tracking northeastward and dominated the circulation between 145°W and 170°E from the Bering Sea to 20°N. The SHINANO MARU north of Unalaska Island had 50 kn northeasterly winds. Other ships on three sides nearer the center were troubled with waves up to 25 ft. Valdez had northerly 52-kn winds on the 5th and 6th. The SEA-LAND ENDURANCE south of Unalaska Island had 50 kn northerly winds on the 7th (fig. 46). There were 20- to 25-ft swell waves south of the center. The storm was weakening on the 8th as it approached Alaska with a 1044 mb HIGH over the Yukon territory. The ACHILLES near buoy 46003 had 48-kn winds from the northeast and 26-ft seas.

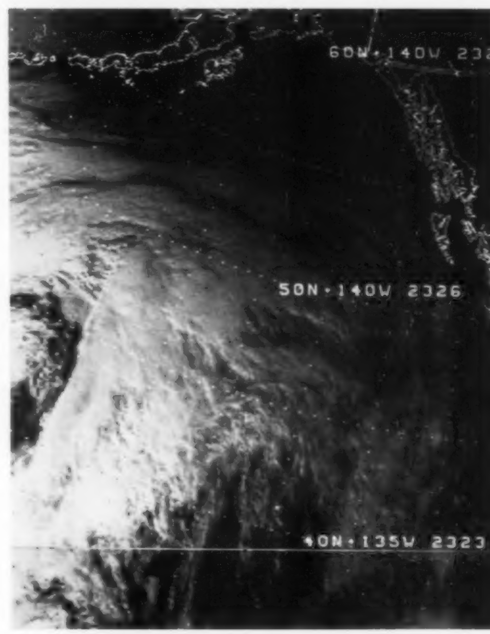


Figure 46.--This image shows the northeastern sector of the storm over the Gulf of Alaska.

This frontal wave formed along the Ryukyo Islands and traveled off the east coast of Japan and the Kurile Islands. At 0000 of the 5th it was centered east of Tokyo and the EDEN MARU slightly east of the occulsion had southerly 45 kn gales with 33-ft swell waves. The gradient east of the front was tight as it pushed against slowly moving high pressure. The PRESIDENT WILSON east of Ostrov Simushir had southerly 48-kn winds and 25-ft seas. A Soviet ship near Mys Lapatka had 36-ft seas.

At 0000 on the 6th the LOW was 984 mb near Ostrov Paramushir. The LIONS GATE BRIDGE (48°N, 159°E) had southerly 59-kn winds and the YOUNG SPLENDOUR (50°N, 160°E) had 50 kn with 23-ft seas and 33-ft swells. By the 7th the LOW was north of Kamchatka and another frontal wave had formed near 40°N.

This low pressure center developed northeast of another center that was moving eastward along 35°N on the 13th. The new center traveled northeastward with winds generally less than gale force until the 16th. At 0600 the BETELGENUSE (47°N, 156°W) and the THAMESFIELD (54°N, 168°W) had winds over 50 kn. Kodiak registered 50-kn northwest winds with gusts to 61 kn. The WESTERN DAWN southeast of Kodiak had over 50- to 70-kn winds. On the 17th the storm was 980 mb near 54°N, 138°W (fig. 47). A U.S. ship had 50-kn winds near 48°N, 133°W. Other ships were having lighter winds but waves over 20 ft. The TOYOTA MARU No. 15 had 50-kn winds from the southwest on the 18th after the storm moved ashore.

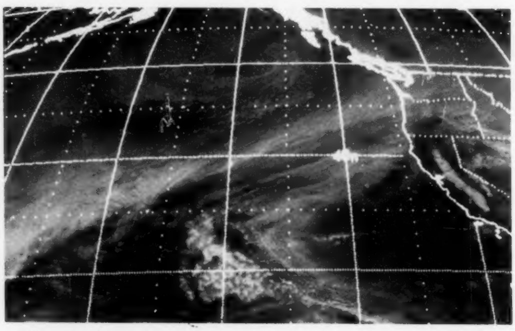


Figure 47.--At 2045 on the 16th the storm was near 50°N, 140°W.

This storm came out of the Sea of Japan on the 17th. On the 19th the LOW was 44°N, 152°E at 976 mb. The CHAMPLAIN (34°N, 142°E) had 50 kn winds and 26-ft seas. Another ship near 35°N, 156°E also reported 50 kn. At 0000 on the 20th the LOW was analyzed as 958 mb. The SEA-LAND VOYAGER recorded 965 mb near 46.5°N, 156.4°E (fig. 48). At this time her winds were only 30 kn but 24 hr earlier she had crossed through a small intense LOW recording a pressure of 963

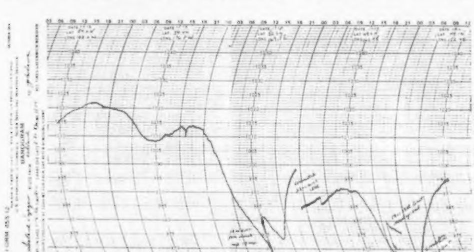


Figure 48.--The SEA-LAND VOYAGER was within 7mb of the center at 0000 of the 20th. She had passed near the center of another storm 32-hr earlier (963 mb).

mb with winds of 65- to 70-kn and waves as high as 25 ft. A ship 500 mi east and one 1,100 mi south of the center had 50-kn winds. Several ships had waves of 20 ft or more.

The storm was tracking northward on the 21st and gradually filling. Another LOW was plunging southeastward over the Sea of Okhotsk. The winds had decreased to less than storm force but swell waves over 20 ft continued. This storm dissipated over eastern Siberia on the 23d and the second LOW brought a few gales as it moved toward Bristol Bay.

This frontal wave was first analyzed over Tokyo Bay on the 22d. The storm developed rapidly. The LYAL found 50-kn winds east of northern Honshu. The SHINKASHU MARU had 23-ft waves east of Tokyo. At 0000 on the 24th the storm was 972 mb near 42°N, 161°E. There were several storm-force wind reports in the southwest quadrant and waves to 25 ft. On the 25th two ships on the 974 mb isobar had 50-kn winds and waves of 26 to 33 ft. The storm was tracking north-northwestward and another LOW had formed about 750 mi to the east. Late in the day the two centers joined. At 0000 on the 26th the NEPTUNE DIAMOND had 971.5 mb near the 970 mb center and 23-ft waves. The storm collapsed late on the 26th.

A weak front stretched from Vancouver Island to Hawaii between two cells of the Pacific High. Frontal waves were racing northeastward along the front. On the 25th one of these continued to deepen. It became a small but intense storm. By 1800 several ships had high winds off Vancouver Island. The ARCO SAG RIVER 50°N, 134°W had northeasterly 65-kn winds. Nearby the BARBER MEMNON had 52 kn and 30-ft seas. On the 26th the GREEN STAR had 68-kn winds, also from the northeast and 20-ft waves. The storm center moved ashore that day and became lost in the mountains.

Cold northerly flow over the warmer Sea of Japan from the Asian continent triggered this LOW. There were some gales on the 25th and 26th. By the 27th this was the major cyclone over the primary shipping lanes at 956 mb near 55°N, 175°W at 1200. The majority of the winds were still gales but a SHIP near 44°N, 169°W reported 39-ft waves, and the SEA-LAND LIBERATOR (36°N, 162°W) had 48-kn southerly winds. Cold Bay was plotted at 60 kn from the southeast. On the 28th the KEN SUCCESS (54°N, 179°E) had 60 kn. The HAN WOO (41°N, 160°W) had 36-ft waves. Others were 20 to 30 ft.

The storm was over the Bering Sea on the 29th and weakening. It turned westward and disappeared on the 30th.

Another storm from the area off Tokyo. Cyclonic circulation developed on the 27th and moved eastward with gales on the 28th. Late that day another LOW center formed in this ones wake. Within 24 hr it was the primary LOW. At 0000 on the 30th the LOW was 980 mb near 39°N, 157°E). The CLEMENTINA (31°N, 150°E) had 48-kn northwesterly winds with 39-ft waves. The PRESIDENT TYLER was having gales and waves over

Figure 49.--This photograph was taken January 31, 1982 near 35°N, 167°E by Captain E. Mandin of the PRESIDENT TYLER. The winds were 50 kn gusting to 80 kn. The swells were 40 ft, occasionally 65 ft. The lifeboat was 60 ft above the water line.

25 ft. At 0000 on the 31st the storm was due north of the PRESIDENT TYLER (40° versus 36°N , and 168°E). She was carrying 50-kn westerly winds and 39-ft seas (fig. 49). Other ships were finding winds up to 30 kn. On the March 1 0000 chart three ships were plotted with waves over 30 ft. They were the BARBER TAIF, JALAMONKAMBI, and VERMILION HIGHWAY. The storm was traveling eastward faster than the PRESIDENT TYLER but she still had 25-ft waves on the 2d. The storm turned northwestward on the 3d to disintegrate.

Casualties--The 28,549-ton AKEBONO MARU No. 28 capsized 260 km north of Tanaga Island on the 6th. There was only one survivor of 33 crewmembers. The ASTERI ran aground on the 24th in poor visibility and a strong current in the Sulu Sea. The LOSINJ collided with the DACHING 232 in the Canton River on the 4th. Five vessels collided in high winds off Kyushu on the 5th: PSILI, NAM KANG, HUNG HSING, and two small unnamed vessels.

The following vessels reported general heavy weather damage: AENEAS AJANTA, APPLE BLOSSOM, ARGONAUT, ATLANTIC HOPE, EASTERN KIN, EASTERN MUSE, KANEY OSHI MARU, MARATHA ELEGANCE, PHILIPPINE PINE, PRESIDENT GARCIA, RIVIERA, TAIHEI MARU, TANJONG TAKONG, UNIVERSAL MONARCH, and YASUGORO MARU. The NANDI with a cargo of lumber sank off southern Japan on the 15th in heavy waves. All 23 crewmen were rescued.

Other Casualties--The tanker SUN ASTER III grounded in a sandstorm on the 31st apparently in the Red Sea. The SILVERHAWK was at Sydney, Australia, with weather damage. The LAMMA ISLAND touched the jetty at Bahrain in strong winds on the 29th. The dredger GRAVELINES sustained weather damage at Salaverry Bay, Peru. The UNION BRILLIANCY contacted the quay in strong winds at Shuaiba, Iraq.

WEATHER LOG, FEBRUARY 1982--There was quite a difference in the orientation of the cyclone tracks this month and the long term mean. There were two primary tracks; one from east of Honshu east-northeastward to about 170°E, then north or northwestward toward the Bering Sea; the other was from about 37°N, 180, east-northeastward toward Vancouver Island. Climatically the western track did not turn so sharply northward and the eastern track turned more sharply northward into the Gulf of Alaska.

The Aleutian Low at 1000 mb was near the climatic mean but farther south near 41°N, 168°E. There was a second 1010 mb LOW over the Gulf of Alaska which was higher than the normal pressure for the area. There was a distinct anomalous trough along 155°W. The 1021 mb Pacific High was normally located near 30°N, 130°W (fig. 50).

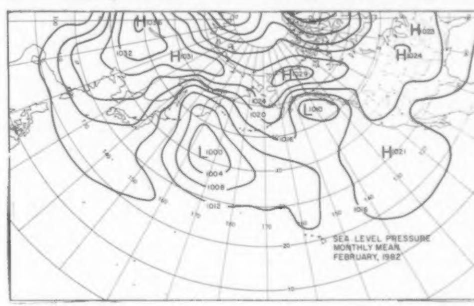


Figure 50.--February mean sea-level pressure.

The most prominent anomaly center was plus 17 mb near 60°N, 168°W, and Nunivak Island. As a gross estimate the area north of latitude 42°N and between longitudes 135°W and 160°E had higher than normal sea-level pressures. This helps explain the more northerly tracks over the northwestern ocean and more easterly track over the northeastern ocean.

The upper-air flow was mainly zonal between latitudes 20° and 40°N. The primary LOW center was over the Sea of Okhotsk with a secondary LOW over the northern Gulf of Alaska. There was a sharp ridge north of 40°N along approximately 165°W. The ridge along the North American coast was normal. There was a wide trough south of latitude 40°N near 160°W.

Extratropical Cyclones--The first day of the month found this frontal wave east of Tokyo. By 0000 of the 2d the storm was 974 mb and the SUMBAWA (38°N, 161°E) was about 200 mi to the south of the center with 60-kn winds. There were other gale and strong gale reports. On the 3d

there were several reports of winds near 50 kn. The CHIHIROSAN MARU (49°N, 171°E) had 56-kn from the northeast with 20 ft waves. The SUMBAWA had 30-ft swells. The PACSTAR found 48-kn winds some 450 mi south of the 972-mb center at 0000 on the 4th.

On the 3d another LOW center had formed at the point of occlusion and moved northeastward. Yet another LOW was moving into the circulation from the west on the 4th. Surprisingly the original LOW survived these intrusions. By 0000 on the 6th the LOW was still 972 mb near 50°N, 166°E. There were a few gales and a 20-ft wave report. On the 7th the LOW split into two centers straddling Kamchatka.

This storm formed on the 6th southeast of Tokyo as a HIGH over Mongolia poured cold air over the warmer water. It traveled eastward under the zonal flow and by 1200 on the 7th was 980 mb near 38°N, 160°E. Gales and 20-ft waves were found in the southwest quadrant, but the SHIMA MARU reported 60-kn southeasterly winds east of the center. Another ship nearby had 54 kn. The storm continued to deepen and on the 8th the TOYOTA MARU No. 11 found 55-kn winds and 33-ft waves about 400 mi south-southwest of the center. The storm was turning to a northwest track (fig. 51). The PACIFIC VENTURE northwest of the center had 60-kn winds and 21-ft waves. By 0000 on the 10th the storm had curved back over the Sea of Okhotsk. The winds had been generally gales or less but there were a few wave reports up to 26 ft. The storm dissipated over Sakhalin Island on the 11th.

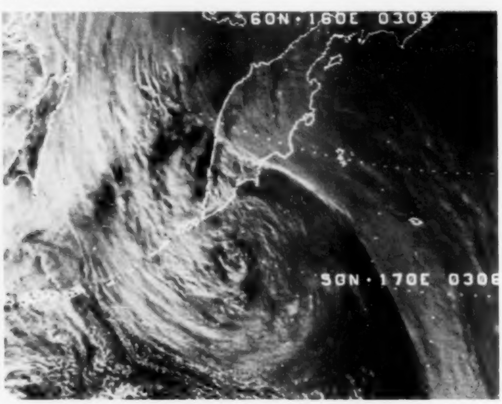


Figure 51.--At 0300 on the 9th the storm was near 50°N, 160°E.

This storm was significant more for its size and configuration than for its severity. A starting place in describing it is with a LOW that formed 500 mi east of Tokyo on the 10th. There was another LOW over the Gulf of Alaska and three to four small centers in between. The Asian LOW moved eastward and expanded as the Gulf of Alaska LOW circled around the Gulf. At 0600 on the 12th the ANCO STANE (34°N, 171°E) reported 50-kn winds and 33-ft seas 300 mi south of the 980-mb center.

On the 12th there was a 1041-mb HIGH over the Yukon and a 1037-mb HIGH near Salt Lake City. The Yukon HIGH ridged westward to a 1048-mb HIGH over Asia. By the 13th a broad band of easterly winds existed between latitudes 43°N and 60°N, with a broad band of westerlies between 35°N and 25°N. At this time there was a narrow banana-shaped trough centered on about 38°N that stretched from continent to continent with several subcenters. The SEA-LAND VOYAGER was south of the western LOW with 48-kn winds and 25-ft waves. The ANCO STANE was still sailing into 33-ft swells. On the 14th (fig. 52) the western LOW disappeared as another LOW developed near the same spot east of Tokyo and moved eastward. The HONEY RIVER (40°N, 174°W) had 50-kn winds northwest of one of the subcenters. The winds were mostly gales or less and the waves under 20 ft. Another LOW had formed over the Gulf of Alaska and was quasi-stationary. The BAY BRIDGE (39°N, 142°W) had 50-kn winds. On the 16th there was only the last Tokyo LOW and the one over the Gulf. The CORNUCOPIA found 45-kn winds and 23-ft waves in the Gulf of Alaska on the 18th. On the 19th only the Gulf of Alaska LOW remained. The JUNEAU MARU had 48-kn winds and 20-ft seas south of Kodiak Island on the 21st and the PRESIDENT KENNEDY (51°N, 149°W) found 45-kn winds and 23-ft waves later in the day. All had disintegrated on the 23d.

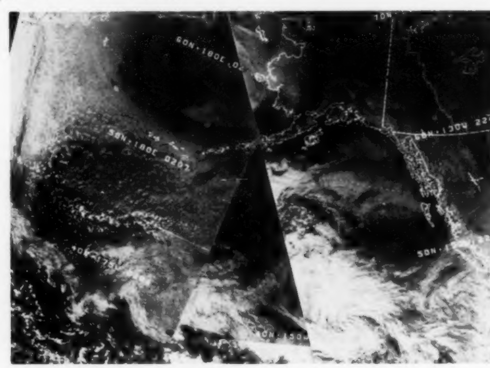


Figure 52.--A mosaic of the northeastern ocean centered on 0000 of the 14th.

This LOW came out of the 30° to 40°N latitude band off Japan on the 21st. By 0000 of the 23d it was already 966 mb dropping 30 mb in 24 hr (fig. 53). Two ships in the southwest quadrant had 45-kn winds with 23- to 36-ft swell waves. The SHINANO MARU (48°N, 164°E) was only a few miles northwest of the 960-mb center (47°N, 166°E) with a pressure of 967 mb and 28-ft waves. Far to the south at 35°N the AMERICAN AQUARIUS had 25-ft swells. The SHINANO MARU had 50-kn northwesterly winds 12 hr later as she sailed southwestward. On the 25th the storm was 970 mb west of Kamchatka. A ship 300 mi east of the center had 60-kn southeasterly winds and 26-ft waves. The storm dissipated over the Sea of Okhotsk on the 26th.

This LOW formed along the Chinese coast and in the East China Sea on the first chart of the 23d. By 0000 of the 25th the LOW was 980 mb near 33°N, 148°E. The GLORIUS ACE (32°N, 148°E) within 3 mb of the center had 60-kn winds with 26-ft waves.

Figure 53.--This perspective is a lot calmer than than the one from the surface.

The ERIKA BOLTEN, east of the center, had 52-kn northerly winds, 26-ft seas, and 33-ft swells. There were several reports of winds near 50 kn and waves over 20 ft on the 26th. The PRESIDENT VAN BUREN (52°N, 165°E) northeast of the center had 48-kn southerly winds. The JEYL (34°N, 165°E), southeast of the center also had 49-kn southerly winds and 23-ft waves southeast of the center.

On the 27th the 966-mb LOW was near 51°N, 161°E (fig. 54). The ZIM SAVANNAH (48°N, 156°E) had 59-kn winds and 26-ft seas, while the SEA-LAND INNOVATOR (50°N, 163°E) suffered 55-kn and 33-ft seas. Late on the 27th the center jumped across the Kamchatka Peninsula and dissipated on the 28th.

Figure 54.--The stronger winds and higher waves were 100 to 300 mi south of the center. Other times they are associated with the upper-air trough which in this case is 600 to 1,000 mi to the south.

The area of contrast between the air masses of two high pressure cells produced this cyclone on the 27th. The sea-level pressure report and wind direction from the TANABATA was particularly important in detecting the development. At 0000 of the 28th the storm was at 41°N, 143°W. The EXXON NEW ORLEANS found 45-kn winds with a dying LOW farther north. There were some gales and waves up to 20 ft on the 28th in the southern quadrant. The storm had intensified to 970 mb off Vancouver Island on March 1. The PRINCE WILLIAM SOUND (50°N, 135°W) reported 56-kn winds out of the east with 20-ft seas. Waves were 20- to 25-ft south and east of the center (fig. 55). By the 2d the gradient had relaxed with only gales as maximum winds but there were still swells up to 25 ft. The storm moved ashore on the Olympic Peninsula on the 4th.

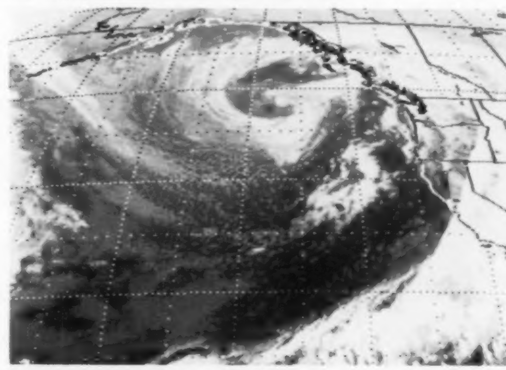


Figure 55.--This infrared image gives a perspect-ive of the cloud heights as the darker the gray the warmer the temperature and the lower the top of the cloud.

Casualties--The casualties in the Pacific area were a fraction of those in the Atlantic. The AJANTA suffered cargo damage. The ANTONIOS G. grounded in strong winds. The CRESTA II, REGINA MARIS, SCOTTISH EAGLE, and TAI JOHN all had weather-related damages. The TAI JOHN was beaten by huge waves and was written off as a total loss. The PANORMOS had ice damage.

Other Casualties--The AUSTRALIAN EXPORTER reported weather damage at Sydney. The OCEAN KING ran aground off Umm al Quwain. The THEOTOKOS was at Penang with cargo damage.

The 60-yr-old, 121-ft schooner SOFIA capsized when strick by two massive waves off northern New Zealand on the 23d. One crewmember drowned, and 16 were rescued after 5 days adrift on two inflatable liferafts.

WEATHER LOG, MARCH 1982 -- There was no doubt about the primary storm path this month as it was very concentrated from about 600 mi east of Tokyo to Nunivak Island and western Alaska. There was a second track, not so well traveled, from the La Perouse Strait into the western Bering Sea. There were secondary tracks southeastward from the northern Gulf of Alaska, off Vancouver Island and off the California Coast. The tracks from off Tokyo to the eastern Bering Sea and off Vancouver Island approximated climatology.

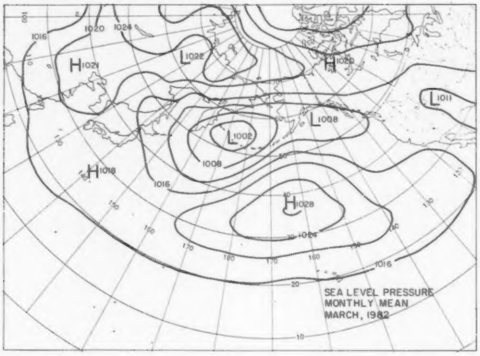


Figure 56.--March monthly mean sea-level pressure.

The monthly mean pressure pattern approximated climatology better than the cyclone tracks as far as the low-pressure centers were concerned (fig. 56). There were two centers to the Aleutian Low, one 1002 mb near 54°N, 172°E and the other 1008 mb near 57°N, 148°W. These corresponded to 1005 mb and 1007 mb, respectively, for climatology and within a few hundred miles of their normal location. The Pacific High (36°N, 164°W) at 1028 mb was 6 mb higher and 1,200 mi west of the normal position.

The principal anomaly center was plus 10 mb near 41°N, 166°W and positive values extended northward in a wedge to Kodiak Island. There were two negative centers, minus 6 mb near 60°N, 170°E and minus 5 mb near 40°N, 133°W.

In the upper air monthly mean height at 700 mb the primary LOW center was on the northern coast of the Sea of Okhotsk. A trough extended southward along 150°E and another trough paralleled the western North American coast along 130°W. There was ridging over the coastal mountains.

There were three tropical cyclones, tropical storm Mamie and typhoons Nelson and Odessa.

Extratropical Cyclones -- The first significant storm of the month formed east of Sakhalin Island on the 5th. There were a few gales on the 6th. By 0000 on the 7th the storm was 974 mb near 52°N, 162°E (fig. 57). The PACIFIC VENTURE (44°N, 154°E) found 55-kn westerly winds with 27-ft seas. Six hours later, the PRESIDENT HOOVER (46°N, 152°E) reported 50 kn with 25-ft seas. The storm was traveling along the east coast of Kamchatka and on the 8th there were a number of 45- to 50-kn wind and waves of 20 to 30 ft reports. The storm was over the eastern Siberian peninsula on the 9th. There were still a few gales north of latitude 50°N and the JAPAN ACE (53°N, 172°E) had 48-kn westerly winds with 26-ft waves. The storm disappeared on the 10th.

This was one of the storms that followed the primary storm track. Ships about 600 mi southeast of Tokyo identified the formation of this frontal wave on the 8th. The storm had raced to 50°N, 178°E by 1200 on the 10th. Some ships along 45°N between 169°E and 176°E had 45- to 55-kn winds with seas up to 25 ft. There were a few wind

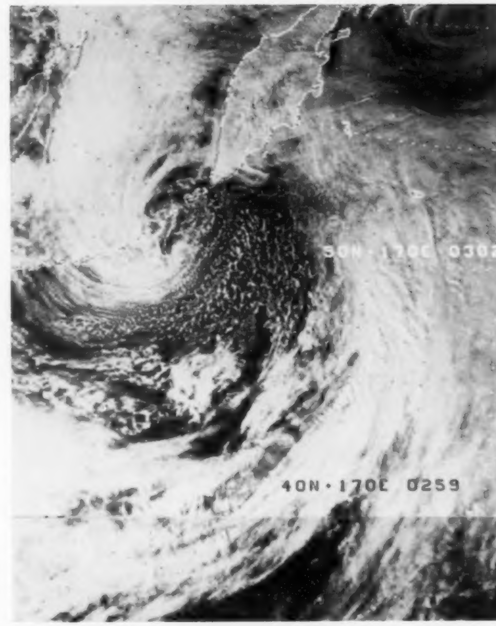


Figure 57.--The storm was centered over the Kurile Islands at 0300 on the 7th.

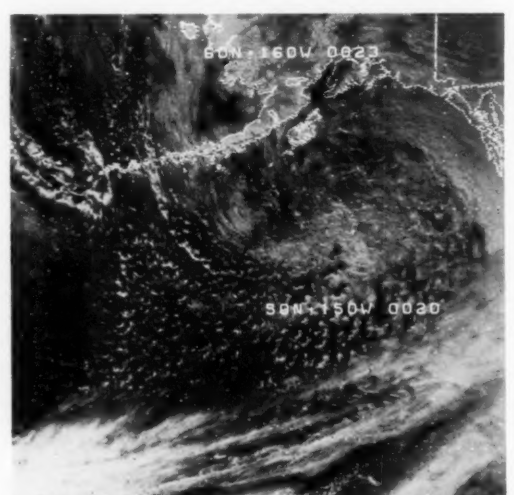


Figure 58.--The X marks the position of buoy 46003 in relation to the storm. The cloud mass just to the northwest would indicate an area of instability was approaching the buoy.

reports near 50 kn and swell waves to 30 ft on the 11th. The buoy 46003 measured 30-ft waves on the 12th, and the EASTERN ACE southwest of the storm had 50-kn winds with 26-ft waves (fig. 58). The 980-mb storm was west of Juneau on the 13th. The SEA-LAND DEFENDER (49°N, 149°W) had 45-kn winds and 20-ft waves on her port stern. The storm broke up in the mountains on the 14th.

This storm came out of Manchuria on the 10th. It was over Ostrov Shimishir at 1200 on the 11th at 994 mb. The COURT LADY (47°N, 154°E) had 55-kn west-southwesterly winds. There was a 50-kn wind and 23-ft sea report on the 12th. Also several 20-ft wave reports. On the 13th the next described storm absorbed this one.

This was a very fast moving storm. It formed as a frontal wave east of Tokyo on the 11th as a short wave trough moved over Japan. Several ships had gales on the 12th as it raced northeastward at 35 kn. The winds at 700 mb were about 70 kn from the southwest. By 0000 on the 13th the 978 mb storm was near 49°N, 180°. There were winds up to 55 kn both north and south of the center. A ship west of the center had 30-ft swells. The storm was 968-mb near 55°N, 177°W at 1200. The EASTERN VENTURE found 55-kn winds and 20-ft seas on the 14th. At 0600 the FORT CALGARY (54°N, 172°W) had 55-kn winds from 250°, 34-ft seas, and 51-ft swell waves. Later in the day the storm moved under the upper-air ridge and weakened rapidly. It survived as a weak circulation into the Gulf of Alaska and finally dissappeared off the Columbia River on the 16th.

This storm was born on the East China Sea on the 11th. It was moving eastward then northeastward under the same strong upper air flow as the previous storm. By 1200 on the 14th the cyclone was 974 mb near 43°N, 168°E. The PRESIDENT TYLER at 43°N, 170°E, about 100 mi east of the center had 66-kn southeasterly winds and 31-ft waves. Her pressure was 982 mb. By 1200 on the 15th the storms pressure had dropped to 950 mb near 50°N, 172°E. There were many wind reports over 50 kn and waves up to 30 ft that day mainly in the southwest quadrant. Winds up to 50 kn and waves over 20 ft continued into the 16th (fig. 59), as the storm passed over the Rat Islands. Its area of influence was rapidly shrinking as another LOW moved along the Kurile Islands. The PRESIDENT TAFT, near buoy 46003 had 45-kn winds and 23-ft waves. The LOW disappeared over Nunivak Island on the 18th.

Another Tokyo storm! This cyclonic circulation was found over Tokyo late on the 17th. The winds had built up to storm force by the 19th. The SEA-LAND PATRIOT had 48-kn westerly winds near 35°N, 160°E. The VAN FORT (38°N, 161°E) had 50-kn winds combined with 41-ft sea and swell. On the 20th, the SEA-LAND INNOVATOR about 180 mi southeast of the 972-mb center (45°N, 176°E) found 55-kn southwesterly winds with 20-ft waves. The storm crossed the Aleutians near Atka Island on the 20th. There were only a few isolated swell

Figure 59.--Although the storm looks like a whirlpool and the winds are feeding inward they are moving upward rather than downward.

reports of over 20 ft. The storm dissipated on the 22d over the west coast of Alaska.

Monster of the Month -- Yet another export from Tokyo harbor. This frontal wave was found on the 0000 analysis of the 21st. At 0000 on the 22d the storm was 986 mb near 38°N, 151°E. The MING GLORY (35°N, 156°E) had 60 kn southeasterly winds. The SHIMA MARU (35°N, 147°E) reported 76-kn west winds with 26-ft waves. There were several wind reports of 60 kn and many of 50 kn with waves up to 35 ft during the day. By 0000 on the 23d the 976 mb LOW was near 39°N, 156°E (fig. 60). Winds over 50 kn and waves of 30 ft were still occurring. About 1800 the storm center passed very close to the MING SHINE and she sustained considerable damage to the deck cargo. On the 24th the storm turned northward as a fast moving LOW approached from the west. This weakened the storm for awhile but it reintensified later on the 26th.

The path of the storm's center was paralleling the Siberian coast. The higher winds were mostly gales south of Ostrov Beringa but the waves were 20 to 40 ft. The storm was weakening over the cold land and sea ice as it again traveled eastward across the northern Bering Sea to dissipate over the Seward Peninsula.

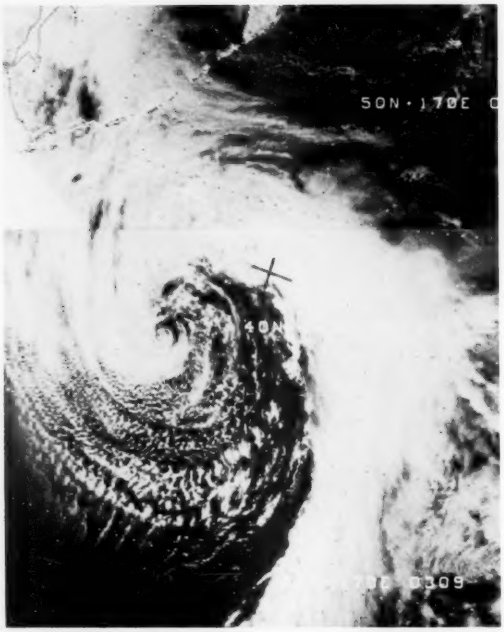


Figure 60.--The X marks the approximate position of the MING SHINE at 0000 on the 23d.

Casualties -- The following vessels reported heavy weather damage during the month: AEGIS DYNAMIC, ALBERNI DAWN, EAGLE/ARROW, EMMA OLDENDORFF, HANJIN SEOUL, IRON BOGONG, JFP THREE, MARCALAN, MING SHINE, MINI LIDO, and WARSAK.

Hurricane Alley

Dick DeAngelis
Environmental Data and Information Service, NOAA
Washington, D.C.

The tropical cyclone tracks and summaries that follow are based on data provided by the Naval Environmental Prediction Research Facility and the Joint Typhoon Warning Center, the Fiji Meteorological Service and the New Zealand Meteorological Service.

TROPICAL CYCLONES - JANUARY 1982

Nine tropical cyclones developed during this month (table 11). The first storm of the year (1-82) actually formed in December of 1981 and will be added to last years statistics. All this months storms formed in the Southern Hemisphere; three reached hurricane intensity (fig. 61).

Chris formed just east of 100°E and is considered an Australia - South Pacific hurricane. However he moved westward into the Mauritius region. The storm was a hurricane from the 10th through the 16th and maximum winds were estimated at 100 kn or more from the 12th to the 15th. Peak sustained winds were estimated at 120 kn on the 13th.

The other two hurricanes formed east of Australia towards the end of the month. Abigail developed in the Coral Sea northeast of Brisbane on the 23d while Hettie came to life the following day between New Caledonia and New Hebrides. Abigail reached minimal hurricane strength late on February 1 and remained at that stage until late on the 3d.

The report on Hettie was kindly submitted by the Fiji Meteorological Service.

A depression about 150 mi east of Port Vila in Vanuatu gave the first indications of cyclone development. The system drifted eastward at about 3 to 4 kn and deepened steadily. By noon on the 26th satellite information suggested that it was nearing gale intensity with estimated maximum sustained winds of about 30 to 35 kn close to the center. At 7pm the cyclone was designated "Hettie".

The system continued to deepen slowly but by noon on Wednesday it had changed its direction of movement to east-southeastward with no perceptible increase in speed.

During the next 24 hr the cyclone continued to intensify and to move east-southeastward. By noon on the 28th it was centered about 150 mi west-southwest of Nadi and moving east-southeastward at about 5 kn with estimated maximum sustained winds of 60 kn and gusts up to 90 kn. (Joint Typhoon Warning Center estimated maximum sustained

Table 11.--Global tropical cyclone summary, January, February, and March 1982

No.	Name	Est. Max Wind (kn)	Basin	Dates
			January 1982	
1.	1-82	45	South Indian	Dec.29- Jan.4
2.	Chris	120	Aust.-S. Pacific	Jan. 6-21
3.	Daphne	35	South Indian	11-16
4.	Errol	50	Aust.-S. Pacific	13-18
5.	Bruno	50	Aust.-S. Pacific	14-18
6.	6-82	35	Aust.-S. Pacific	18-21
7.	Abigail	65	Aust.-S. Pacific	23-Feb. 7
8.	Hettie	70	Aust.-S. Pacific	24-Feb. 5
9.	Graham	35	Aust.-S. Pacific	30-Feb. 2
10.	Electra	45	South Indian	30-Feb. 6
			February 1982	
1.	Harriet	35	Aust.-S. Pacific	14-18
2.	12-82	45	South Indian	22-25
3.	Ian	65	Aust.-S. Pacific	27-Mar. 7
4.	Isaac	90	Aust.-S. Pacific	27-Mar. 5
			March 1982	
1.	Mamie	60	W. North Pacific	14-24
2.	16-82	40	South Indian	15-20
3.	Justine	70	South Indian	16-26
4.	Nelson	105	W. North Pacific	18-Apr. 1
5.	Odessa	75	W. North Pacific	28-Apr. 4

winds at 70 kn).

For the next 36 to 48 hr, until early on the 30th, the cyclone exhibited considerable irregularity and inconsistency in the direction of its movement. Post analysis of all available data suggests that it turned northeastward, westward and then south-southeastward, completing a loop in its track, moving at a slow speed of about 2 to 3 kn. The system center remained within 100 to 150 mi of Mamanutha Group and extreme western Viti Levu. During most of this period the cyclone retained hurricane intensity.

The Mamanutha Group appears to have experienced the strongest winds averaging at times to 40 kn with gusts up to 55 kn. These winds, although not quite damaging in strength, lasted for about 48 hr. and some of the structural damage that may have occurred would be attributable largely to their persistence.

Prolonged gales are expected to have sustained rough seas for a long time and wave action is likely to have caused damage to exposed beaches, shallow reefs and to structures on the sea (eg. jetties) about southern Yasawa Group, Mamanutha Group, Vatulele, Kandavu and beaches of northern and western Viti Levu. Heavy rain from the 27th to 31st caused widespread flooding about north-western parts of Viti Levu. Three lives were lost; two by drowning and one by electrocution.

Tropical storm Bruno and a system that followed (perhaps just a continuation of Bruno) brought heavy rains to western Australia. From Wyndham to Albany the coastal regions were flooded by torrential downpours. In Tambellup, south of Katanning water was more than 3 ft deep and some 3,000 sheep either perished or were shot in saleyards while thousands of others died on farms. The Collie River rose 9 ft above normal and some 20,000 sheep died in the area around Kojonup township. Flooding was also prevalent in the Perth - Albany region where the swollen Blackwood River flooded more than 40 houses and water levels exceeded the previous record set in 1964.

Tropical storm Electra and several depressions devastated Madagascar during the month, leaving 30 people dead and 50,000 homeless. In Tananarive, the capital, 380 houses collapsed due to incessant rains which had cut telephone lines, washed out roads and railways and triggered landslides.

TROPICAL CYCLONES - FEBRUARY 1982

Of the four February tropical cyclones two reached hurricane strength; both formed late in the month. Jan came to life on the 27th and skirted the northwest coast of Western Australia. Her winds climbed to 65 kn briefly on the 5th. The following day Jan moved ashore south of the Northwest Cape.

Isaac also formed on the 27th near the Samua Islands. The following summary is based upon a report prepared by Mrs. Reddy Sarojni of the Fiji Meteorological Service.

Isaac, which caused serious damage in Tonga, formed about 100 mi northeast of Apia. The system deepened steadily as it moved southeastward then southwestward. Late on March 1 Isaac attained hurricane strength. The next day he was centered about 35 mi southeast of Vavau with maximum sustained winds of 80 kn, gusting to 120 kn. Early on the 3d Isaac seemed to have reached peak intensity with estimated maximum sustained winds

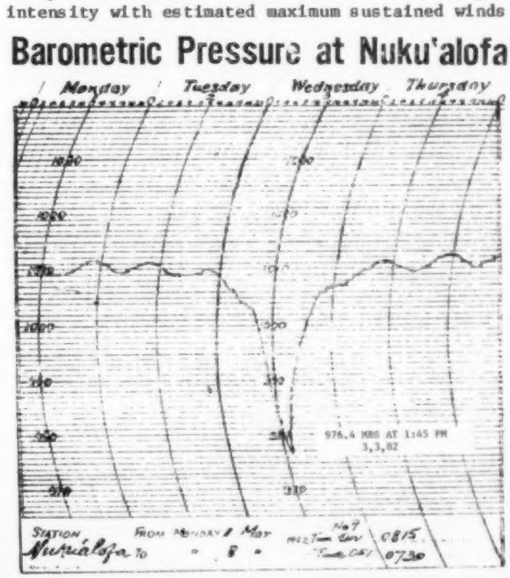


Figure 62.--A copy of the barograph trace at Nuku'alofa during Isaac.

of 90 kn. Late on the 2d Haapai reported maximum sustained winds of 57 kn before communications broke down. At 0045 on the 3d Nukuakfa reported a peak gust of 92 kn along with a minimum pressure of 976.4 mb (fig. 62). A few hours later a ship about 15 mi northwest of Isaac's center reported a 90-kn average wind.

Although Isaac was a relatively small diameter cyclone, with hurricane force winds confined to within 30 miles of its center, he caused extensive damage in the Haapai and Tongatapu Groups. Many vessels in the area were severely damaged and there were reports of at least 6 deaths. A striking feature of the hurricane was the extent of the storm surge. The sea raced through the Customs shed at Nukualofa and flattened a brick

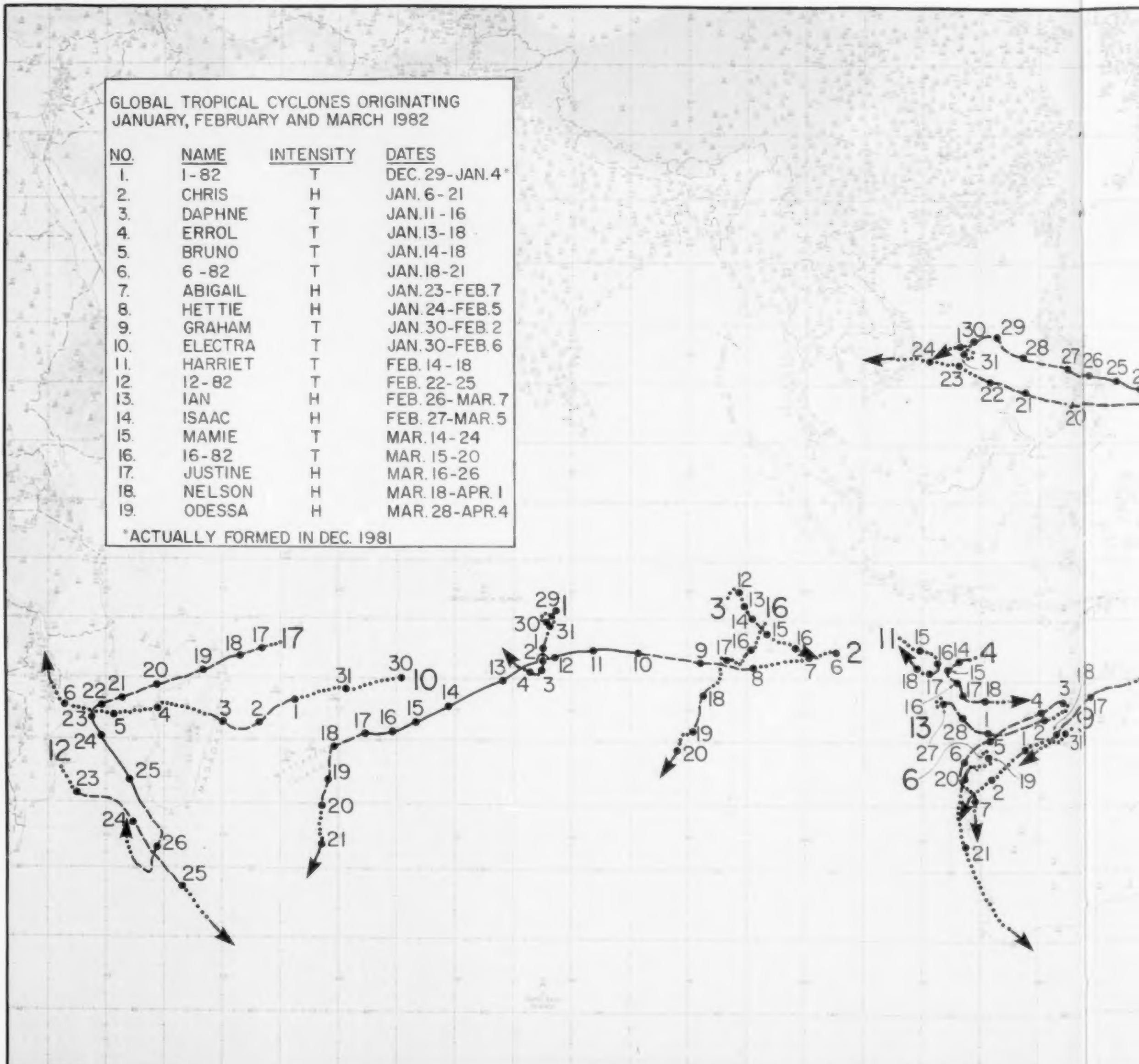


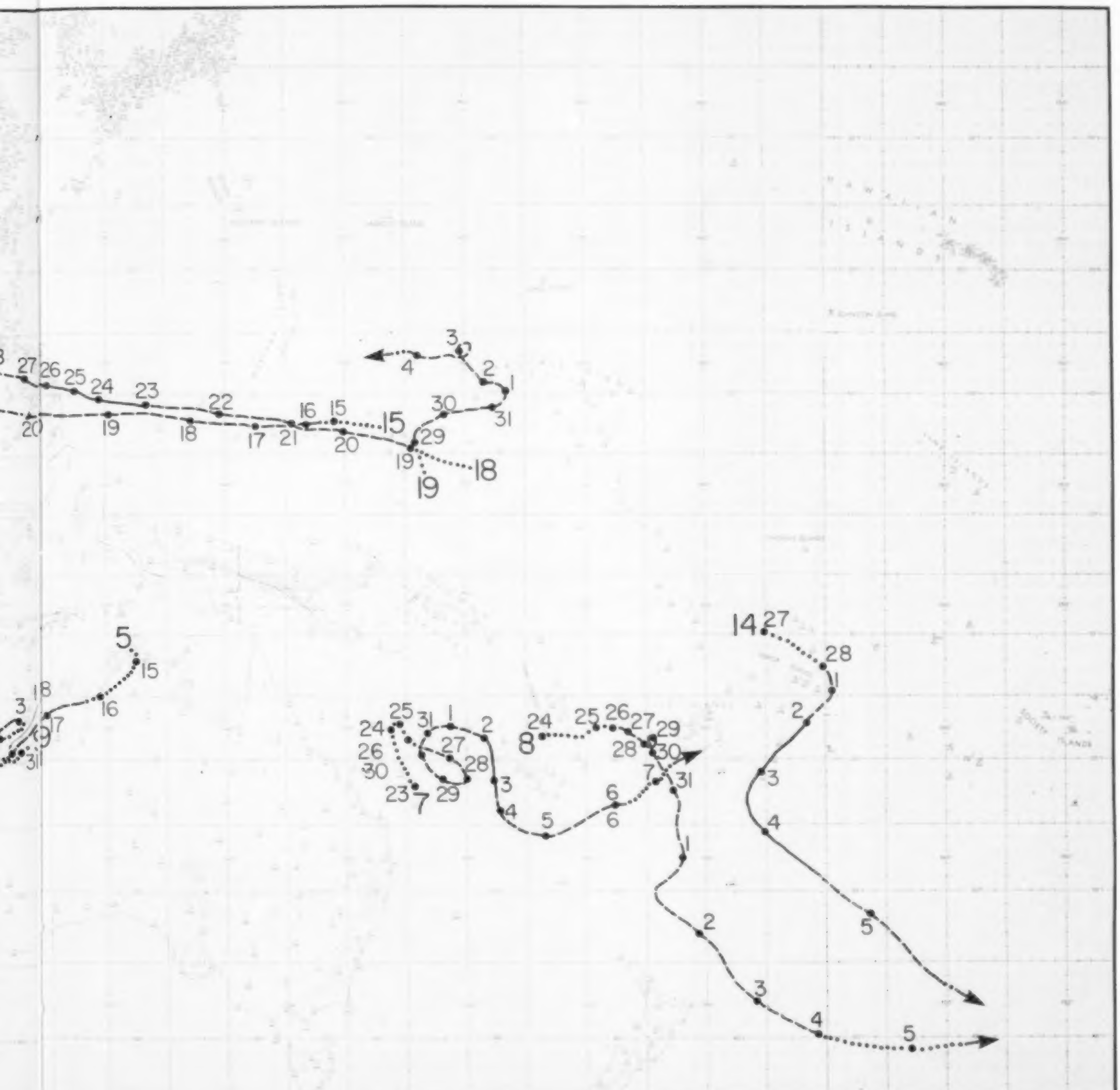
Figure 61.--Global tropical cyclones, January, February, March, 1982

wall. It swept over many low-lying areas and 2 days after the storm a pilot reported that 30 percent of Tongatapu was still under water.

TROPICAL CYCLONES - MARCH 1982

Three of the five March tropical cyclones developed in the western North Pacific; two of these reached typhoon strength. A tropical storm and hurricane Justine came to life in the South Indian Ocean.

Justine became another in a series of cyclones to affect Madagascar this season. She reached hurricane strength, with 70-kn winds, shortly before moving across the northern tip of the island. This trek took its toll and Justine fell back to minimal tropical storm strength after



emerging in the Mozambique Channel. However she regained hurricane intensity by the 21st and kept it until late on the 25th as she skirted the soutwest coast of Madagascar.

Off northern Mozambique it was reported that 74 fishermen were missing after being caught in Justine on the 20th and 21st. The missing men were on board five vessels fishing near Angoche. They took refuge near an island but the storm apparently broke their moorings. Helicopters found only two boats, both aground and one capsized. The other three vessels were still missing. The MIGHTY BREEZE sustained some damage in the Mozambique Channel.

Both Nelson and Odessa reached typhoon strength in the western North Pacific. Odessa was a short-lived storm that formed near the eastern Carolines and moved through the western portion of the Marshall Islands. Her winds climbed to typhoon strength late on April 2 and reached a peak of 75 kn a few hours later. About 24 hr later she was downgraded to a tropical depression.

Nelson moved on a more typical early season track after forming in the eastern Carolines. Sailing west-northwestward Nelson steadily gained in strength. By 1800 on the 21st he had reached typhoon intensity. After a brief weakening he began to intensify again on the 23d as he approached the central Philippines. Maximum sustained winds reached 105 kn at 1200 on the 25th as the typhoon barged ashore across Leyte. Strong winds and torrential rains raked the Philippine's "sugar bowl" causing widespread flooding and destruction. Red Cross reports indicated that more than 700 houses had been destroyed in Cebu, Bohol and Surigao Provinces. Latest reports indicate that at least 56 people died, 32 were missing, and more than 28,000 were left homeless. Most of the rice and corn crops and coconut plants in these central provinces were destroyed. Nelson weakened after this trek through the Philippines and perished in the South China Sea.

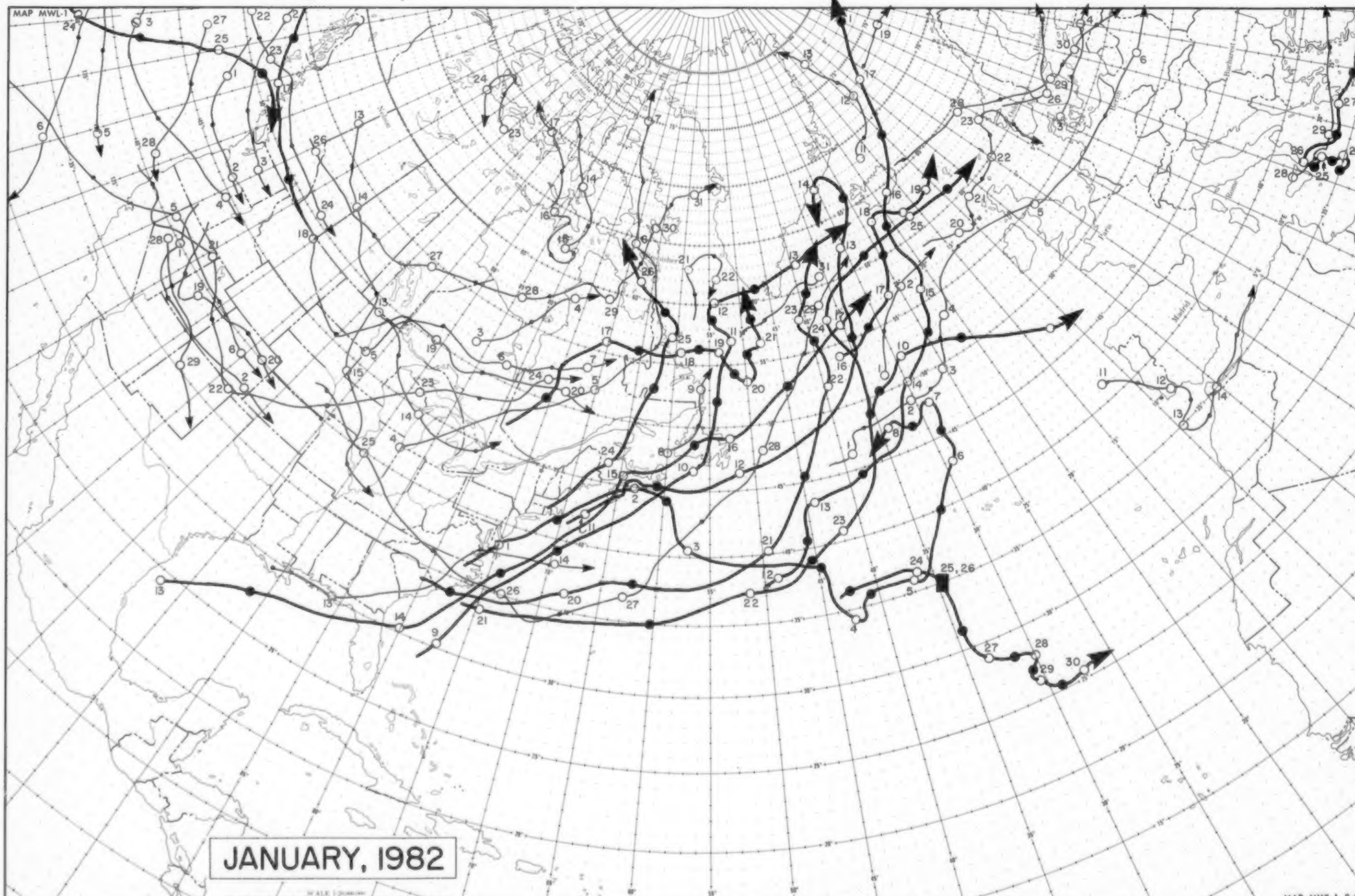
TROPICAL CYCLONE WATCH--1982

Table 12 is a preliminary list of the global tropical cyclones that have occurred up until press time.

Table 12.--Tropical cyclone watch, 1982

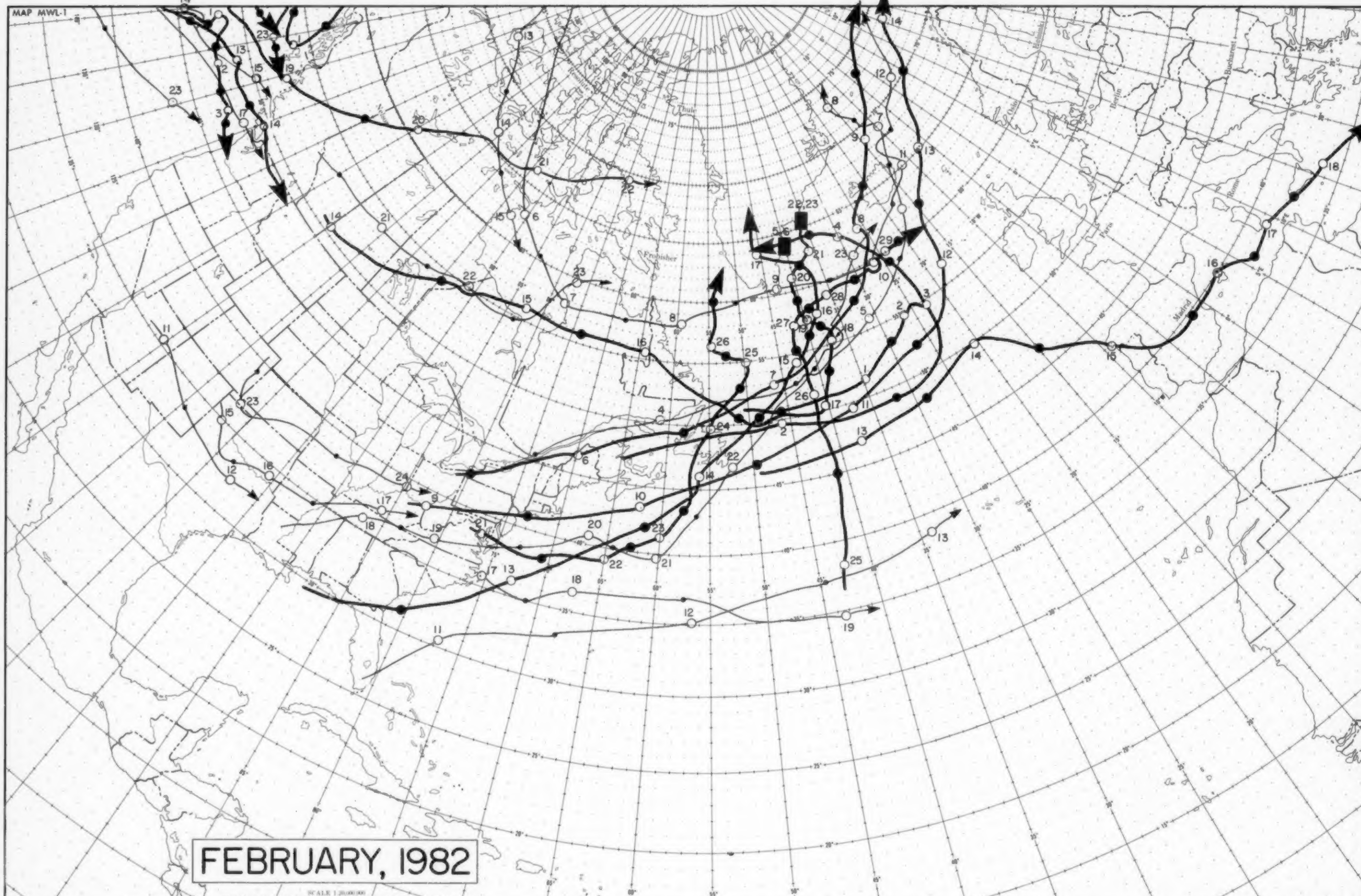
Western North Pacific				Australia-South Pacific			
Mamie	TC-1	T	March	Bruno	5-82	T	Jan.
Nelson	TC-2	H	March	--	6-82	T	Jan.
Odessa	TC-3	H	March	Hettie	7-82	H	Jan.
Pat	TC-4	H	May	Abigail	8-82	H	Jan.
Ruby	TC-5	H	June	Graham	9-82	T	Feb.
Tess	TC-6	T	June	Harriet	11-82	T	Feb.
Skip	TC-7	T	June	Ian	13-82	H	Feb.
Val	TC-8	T	July	Isaac	14-82	H	March
Winona	TC-9	T	July	Bernie	17-82	H	April
Andy	TC-10	H	July	Dominic	18-82	T	April
Bess	TC-11	H	July	Claudia	21-82	T	May
Eastern North Pacific				**South Indian Ocean**			
				--	1-82	T	Jan.
Aletta	Td-1	T	May	Chris	2-82	H	Jan.
Bud	Td-4	T	June	Daphne	3-82	T	Jan.
Carlotta	Td-6	T	July	Errol	4-82	T	Jan.
Daniel	Td-8	H	July	Electra	10-82	T	Feb.
Emilia	Td-9	T	July	--	12-82	T	Feb.
Fabio	Td-12	H	July	Justine	15-82	H	March
Gilma	Td-13	H	July	--	16-82	T	March
Hector	Td-14	H	July	Karla	19-82	H	April
Ira	Td-15	T	July				
John	Td-16	H	Aug				
North Atlantic				**North Indian Ocean**			
				--	20-82	H	May
Alberto		H	June	--	22-82	T	June

Principal Tracks of Centers of Cyclones at Sea Level, North Atlantic



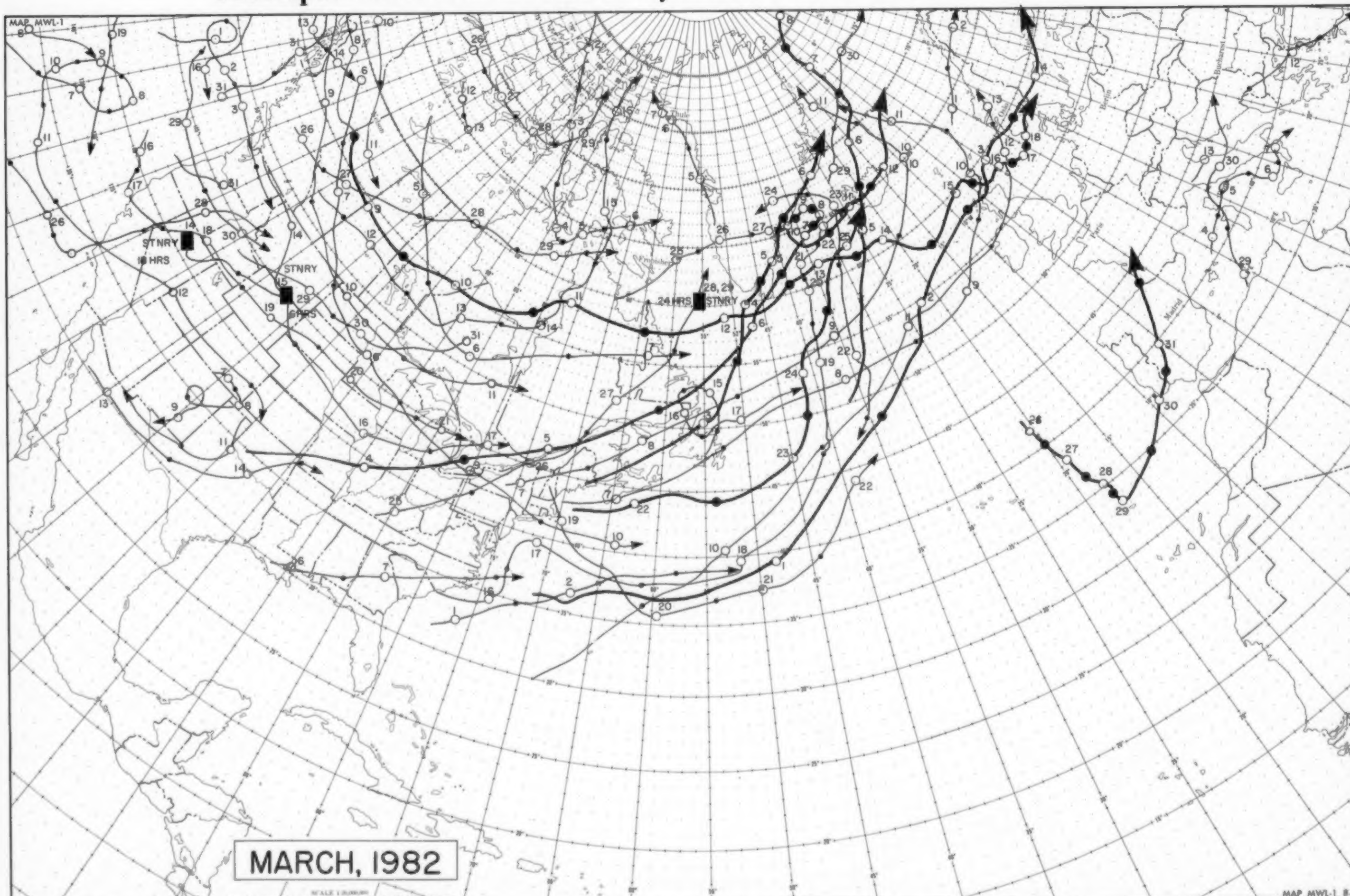
Closed circle indicates 0000 and open circle 1200 GMT positions. Square indicates stationary center. Cyclone tracks marked with a heavy line are described in the Weather Log.

Principal Tracks of Centers of Cyclones at Sea Level, North Atlantic



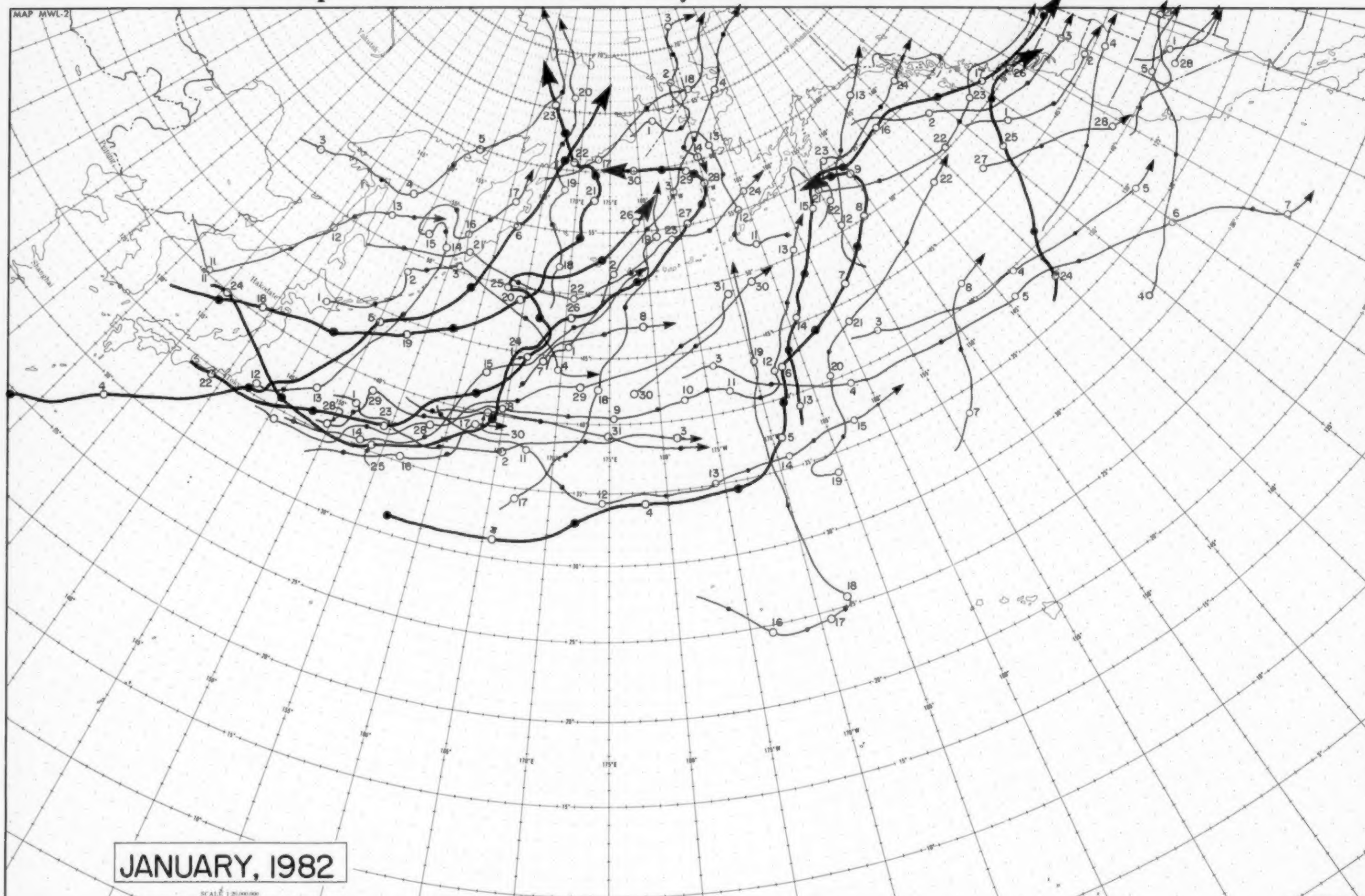
Closed circle indicates 0000 and open circle 1200 GMT positions. Square indicates stationary center. Cyclone tracks marked with a heavy line are described in the Weather Log.

Principal Tracks of Centers of Cyclones at Sea Level, North Atlantic



Closed circle indicates 0000 and open circle 1200 GMT positions. Square indicates stationary center. Cyclone tracks marked with a heavy line are described in the Weather Log.

Principal Tracks of Centers of Cyclones at Sea Level, North Pacific



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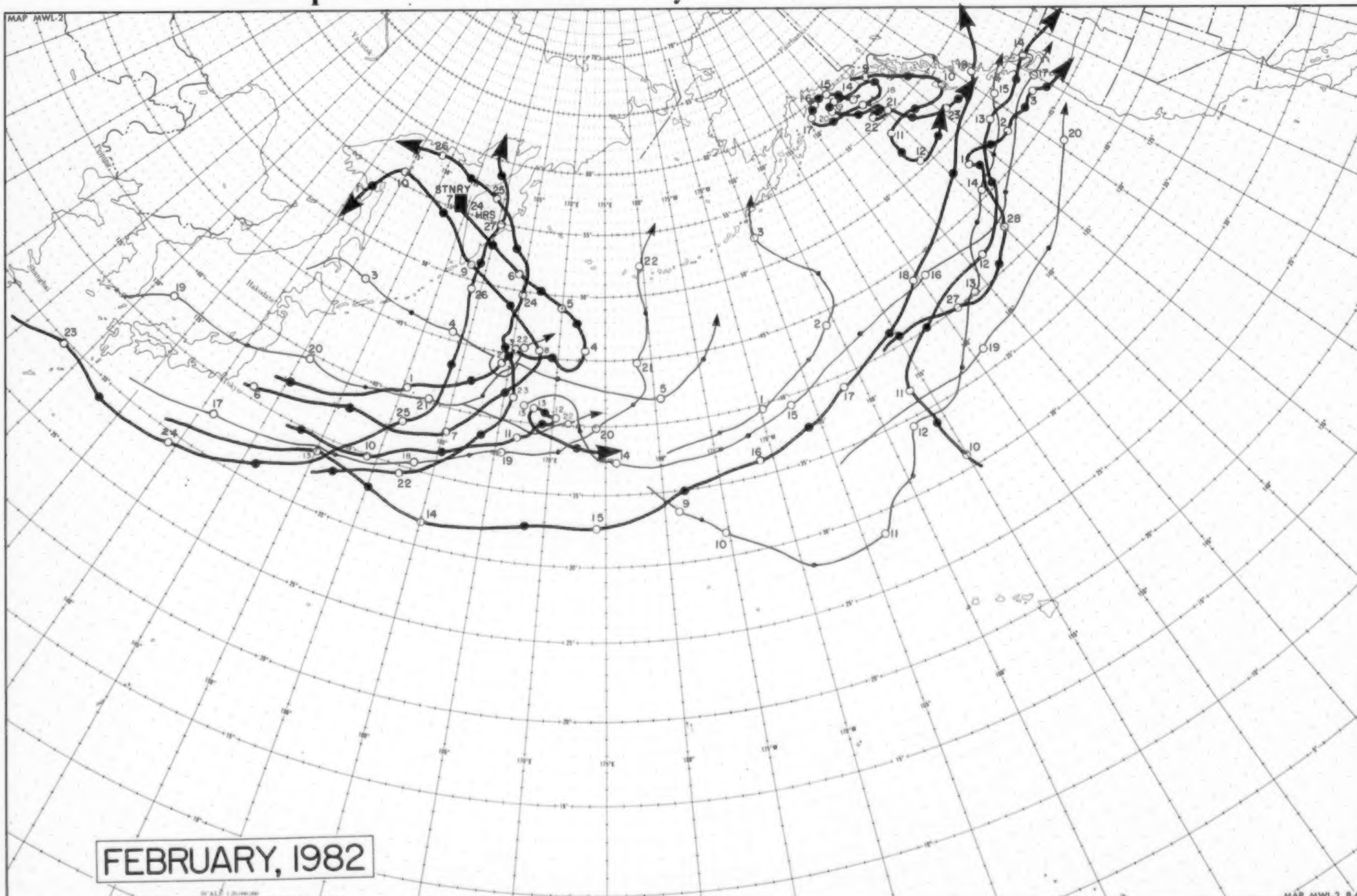
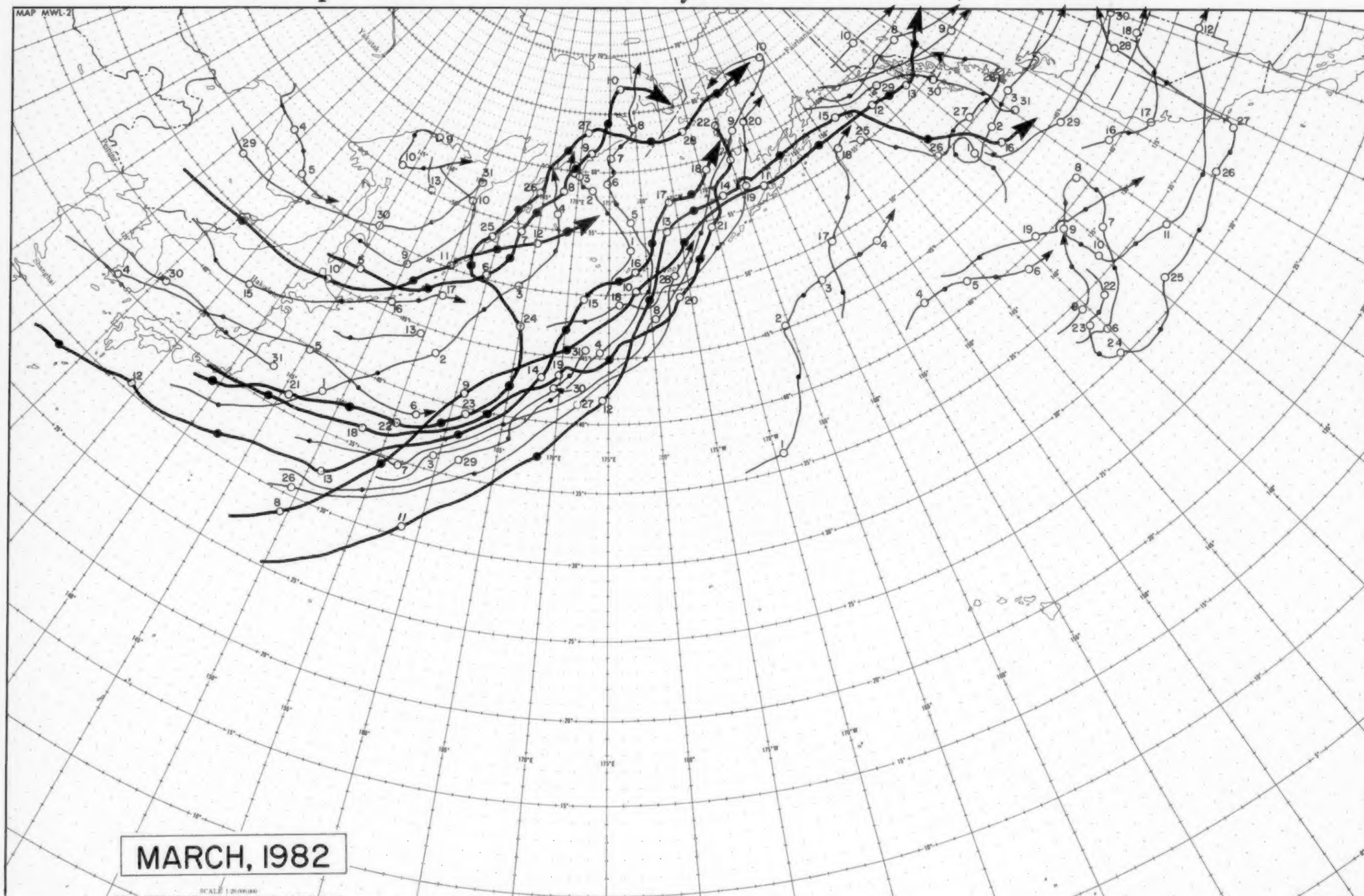
Principal Tracks of Centers of Cyclones at Sea Level, North Pacific



Closed circle indicates 0000 and open circle 1200 GMT positions. Square indicates stationary center. Cyclone tracks marked with a heavy line are described in the Weather Log.

Principal Tracks of Centers of Cyclones at Sea Level, North Pacific



Closed circle indicates 0000 and open circle 1200 GMT positions. Square indicates stationary center. Cyclone tracks marked with a heavy line are described in the Weather Log.

North Atlantic Selected Gale and Wave Observations

January, February and March 1982

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
ATLANTIC	JAN.															
U*JW	1	44.2 N	24.9 W	00	20	M 48	5 NM	64	1003.5	16.0	16.0					
SEDCOS	1	46.9 N	48.7 W	03	33	M 50	5 NM	21	0983.2	3.0	2.6	9	16.5			
GRHP	1	41.2 N	46.0 W	06	28	M 55	5 NM	81	0985.4			4	13	28	10	32.5
SMPO	1	38.5 N	34.0 W	12	26	M 48	10 NM	02	0992.0	16.5	18.0	6	13	23	9	19.5
FNGM	1	38.0 N	47.1 W	12	32	M 45	5 NM	25	1004.3	12.5	18.0	7	26	31	8	26
GNOX	1	40.4 N	41.7 W	12	28	M 56		88	0985.9	9.6	15.0	4	11.5	27	8	32.5
LHOE	1	39.3 N	52.5 W	12	30	M 45	10 NM	02	1015.0	10.0		8	29.5			
TFSV	1	43.6 N	42.3 W	12	30	68	.25 NM	07	0984.8	- 8.0						
USDU	1	42.1 N	47.0 W	12	28	58	.5 NM	07			18.0	15	32.5			
UVEH	1	48.4 N	13.6 W	12	18	M 48	2 NM	53	0998.9	12.0	14.0	7	11.5			
VRKB	1	40.2 N	48.4 W	12	30	M 50	5 NM	88	1004.3	8.2	14.0	4	6.5	31	13	36
WNDJ	1	41.0 N	40.9 W	17	32	42	5 NM	16	0985.4	13.4	17.3	6	8	32	10	36
KFCS	1	41.9 N	47.4 W	18	32	45	5 NM	25	1003.3	7.2	10.5	6	28	31	12	28
KGYE	1	41.8 N	39.8 W	18	30	48	5 NM	03	1024.2	9.4	14.4	4	16.5	31	11	24.5
SMPO	2	38.5 N	35.0 W	00	27	M 50	5 NM		0989.0	14.0	19.0	6	14.5	23	9	26
GNOY	2	36.0 N	43.3 W	00	32	M 50	10 NM	50	1007.9	13.4		8	16.5	31	7	32.5
KFCS	2	41.7 N	45.1 W	00	32	45	5 NM	07	1003.6	8.9	17.8	8	29.5	32	12	32.5
LONR	2	34.4 N	42.8 W	00	29	M 48	10 NM	25		15.6	20.0					
GNOX	2	40.3 N	43.5 W	06	34	M 52	5 NM	16	1003.7	12.5	18.0	4	10	33	10	29.5
GTUS	2	46.6 N	43.3 W	06	34	M 43	5 NM	02	0995.9	6.0		6	24.5			
SQEF	2	46.1 N	47.1 W	06	34	M 48	10 NM	02	1006.3	3.0		9	13			
UKPE	2	42.7 N	42.1 W	06	31	M 45	1 NM	97	0996.7	9.5	16.0	13	26			
PCOB	2	41.5 N	10.2 W	12	17	M 48	5 NM	02	1016.8	16.8	14.0	6	8			
WNDJ	2	31.0 N	38.9 W	12	32	M 52	5 NM		0984.4	11.2	16.7	6	8	32	0	32.5
SMPO	3	38.4 N	36.2 W	00	29	M 45	2 NM	25	1003.0	14.0	19.0	5	13	30	9	28
PJSN	3	36.4 N	12.7 W	06	19	M 52	10 NM	51	1010.4	18.0	17.7					
WNDJ	3	42.4 N	34.7 W	06	30	55	1 NM	13	0990.5	10.6	14.4	6	13	30	6	32.5
GHZE	3	38.7 N	68.0 W	12	30	48	10 NM		1010.0							
VRCO	3	48.5 N	08.5 W	12	19	M 49	2 NM	50	0995.6	12.0	12.0	5	6.5	20	8	32.5
WFQB	3	38.7 N	60.4 W	12	31	M 50	5 NM	27	1004.0	10.0	20.0	6	10	31	12	28
GRHP	3	40.2 N	56.1 W	18	01	M 50	5 NM	80	0999.6	9.5	14.0	3	8	31	9	23
GTUS	3	44.7 N	52.2 W	18	04	M 72	10 NM	02	1009.8		6.0	4	10	05	8	23
KFCX	3	38.3 N	60.5 W	18	33	48	5 NM	02	1010.1	10.8	18.8	10	24.5	33	10	32.5
C7L	4	56.7 N	20.0 W	09	05	M 58	1 NM	61	0990.9	6.3	10.5	8	24.5	09	11	32.5
DFOJ	4	58.6 N	13.5 W	09	08	M 52	5 NM	60	0997.5	6.0	5.5					
ENVK	4	33.2 N	45.3 W	12	29	M 48	2 NM	21	1004.8	18.0	19.0	8	13			
UURB	4	50.3 N	00.5 W	12	01	48		02				22	37.5			
DGPF	4	43.4 N	09.3 W	18	23	66	5 NM		1016.4	15.1	13.5	4	6.5	22	8	11.5
WEZU	4	28.5 N	44.1 W	18	26	M 50	10 NM	25	0998.2	20.6	20.6	8	10	27	2	11.5
C7L	5	56.9 N	19.3 W	00	06	M 42	1 NM	20	1001.7	6.7	9.9	8	14.5	09	11	29.5
CG2388	5	44.2 N	66.3 W	06	17	M 55	1 NM	82	0996.0							
GYAM	5	41.2 N	13.7 W	12	01	M 60		25			15.6	4	6.5	27	8	11.5
PGNL	5	27.3 N	50.9 W	12	35	50	10 NM		1013.9	19.8	22.9	5	10	33	8	19.5
DGVHYD	5	44.1 N	58.5 W	18	18	M 52	1 NM	61	0997.9	8.4	4.6	8	16.5			
FNHV	5	40.4 N	60.4 W	18	19	M 55	2 NM	21	1000.2	15.7	20.0	5	16.5	19	8	19.5
GUZJ	5	42.5 N	70.5 W	18	32	M 50	10 NM		0998.0							
GWZU	5	30.7 N	42.2 W	18	36	M 30	10 NM	15	1003.8	18.3	20.6	4	13	34	13	32.5
GNOX	6	40.3 N	64.5 W	00	29	M 50	10 NM	60	1004.4	8.0	19.0	4	13	27	9	26
GONA	6	40.6 N	33.2 W	12	34	M 52	5 NM	60	0992.8	13.0	18.0	4	18	05	8	16.5
FNPA	6	46.5 N	07.0 W	18	26	M 48	2 NM	63	1011.0			3	5	26	8	10
GBVV	6	40.9 N	30.5 W	18	23	M 52	5 NM	21	0987.8	16.0	14.7	4	8	25	6	26
DBFJ	7	58.3 N	52.5 W	09	12	M 61	5 NM		1009.1	4.5	2.9	8	23			
8KVA	7	42.1 N	36.4 W	12	11	M 22	10 NM	03	0998.5		16.5	5	11.5	05	12	34.5
FSGP	7	45.6 N	01.4 W	12	01	55		05								
GNOY	7	49.3 N	05.6 W	12	09	M 50	5 NM	87	1016.8	4.2	10.1	5	10	08	5	13
ONBD	7	52.2 N	19.6 W	12	07	M 52	5 NM		1005.3	9.0	10.5	8	16.5			
SQBS	7	50.0 N	23.8 W	12	10	M 55	5 NM	02		12.4	12.0					
YTHU	7	38.7 N	64.9 W	12	23	M 60	2 NM	25	1015.8	16.0	22.0	6	10	26	6	5
ZCKE	7	50.1 N	29.6 W	18	03	M 41	2 NM	61	0990.7	10.3	11.0	5	13	05	8	24.5
SLNA	8	54.8 N	23.0 W	00	07	M 72	10 NM	02	1013.0	8.5		6	11.5	11	6	11.5
TFAB	8	50.9 N	05.8 W	00	13	52	200 YD	84	1004.0	3.0						
GJVE	8	50.5 N	01.5 W	06	14	M 50	1 NM	88	1011.1	0.5	9.0	4	8	14	4	8
C7C	8	52.7 N	35.5 W	12	08	43	10 NM		1001.5	7.6	7.4	12	21	06	17	28
DSSN	8	33.6 N	66.7 W	12	22	M 52	5 NM	60	1013.0	20.5	19.5	5	6.5	22	5	6.5
GZVJ	8	32.1 N	35.5 W	18	28	M 24	10 NM	00	1014.2	19.0	18.8	5	10	30	12	39
UJYM	9	26.8 N	16.4 W	06	03	58	10 NM		1030.7	20.0	22.0					
GVHY	9	44.1 N	58.5 W	09	28	M 48	5 NM	71	0998.8	- 5.5		9	14.5			
FNHV	9	45.9 N	37.9 W	12	12	M 66	10 NM									
SDQT	9	45.7 N	57.2 W	12	28	M 58			0996.8	- 5.0	5.5	6	10	26	7	11.5
OAKE	9	46.0 N	55.6 W	18	27	M 44	2 NM	26	0996.5	- 4.5	2.5	6	26			

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
ATLANTIC	JAN.															
FNHM	9	44.6 N	34.1 W	18	28	M 51			0992.4	13.3	14.4	5	13			
GYZK	9	36.0 N	54.8 W	18	28	M 15	10 NM	02	1016.1	14.4	18.5	3	3	29	8	39
KFCV	9	45.3 N	50.3 W	18	26	45	2 NM	70	1001.0	0.0	4.4	6	24.5			
SLNA	9	50.7 N	41.7 W	18	27	M 72	.25 NM	65	0997.8	6.0		3	5	12	12	11.5
UJDG	9	46.2 N	52.0 W	18	26	47	.5 NM	23	0999.0	- 5.0	2.0	9	26			
VCRJ	9	14.8 N	38.5 W	18	26	M 50	200 YD									
FNNXX	10	49.1 N	34.9 W	00	28	M 55	1 NM	65	0982.5	3.2	13.7	8	21			
GVHC	10	43.6 N	35.8 W	00	27	M 49	2 NM	18	1006.7	9.5	14.5	3	8	27	9	23
CGDJ	10	38.5 N	67.9 W	06	27	M 60	2 NM	62	0991.0	6.0	13.5	5	6.5	27	8	21
UELJ	10	49.9 N	05.9 W	06	08	50	5 NM	60		4.0						
VRKC	10	46.8 N	24.8 W	06	27	M 55	10 NM	16	0993.2	10.0	12.7	5	16.5	27	9	23
DZHP	10	51.8 N	41.7 W	12	29	M 54	5 NM	07	1004.0	7.0	5.0	11	23	29	14	29.5
FNHM	10	45.3 N	29.3 W	12	30	M 42	.5 NM	27	1003.9	6.6	14.0	12	26			
FSGP	10	45.6 N	01.4 W	12	01	M 50		20								
GYUD	10	49.0 N	35.1 W	12	28	M 50	.5 NM	07	0989.0	5.9		5	10	25	8	19.5
UJDG	10	54.5 N	55.0 W	12	18	50	10 NM	28		8.0	4.0	18	26			
ZGDJ	10	38.6 N	70.0 W	12	27	M 50	10 NM	02	0994.7	3.0	14.5	8	21	24	5	10
KRTB	10	46.7 N	48.8 W	15	15	M 65	1 NM	63	0995.7	4.0	2.0	7	11.5			
WSVB	10	46.0 N	55.1 W	15	23	M 60	1 NM	07	0970.8	3.0	2.0	6	14.5	15	12	32.5
WVFN	10	46.9 N	48.7 W	15	13	M 57	2 NM	62	0995.0	3.8	1.8	7	11.5	26	12	3
CGDT	10	50.8 N	53.5 W	18	10	M 55	.5 NM	71	0967.8	- 1.0		9	11.5	10	11	19.5
GPEN	10	46.4 N	25.6 W	18	30	M 50	5 NM	27	0993.0	9.4		12	24.5	29	11	41
GVHY	10	44.1 N	58.5 W	18	23	M 50	5 NM	02	0984.9	3.4	2.8	7	11.5	14	10	13
GXEW	10	43.5 N	31.9 W	18	28	M 52	2 NM	07	1008.3	11.8	15.0	6	11.5	28	8	28
JLHM	10	52.3 N	54.2 W	18	09	M 51	200 YD	72	0982.5	4.5	0.5	3	3	07	9	10
KFDZ	10	37.4 N	33.5 W	18	29	22	10 NM	02	1025.7	15.6	16.1	6	10	30	13	32.5
RIGG	10	44.0 N	59.6 W	18	26	M 60	5 NM	01	0981.6	0.3		7	16.5	17	9	24.5
UHAJ	10	52.3 N	53.6 W	18	07	48	10 NM	01		- 5.0	6.0	8	6.5			
ZCKF	10	46.5 N	54.1 W	18	26	M 65			0978.7	2.0	2.0	5	19.5	22	8	32.5
ESSS	11	52.1 N	50.9 W	00	14	M 58			0968.6	0.0		9	13			
URJ*	11	53.0 N	51.7 W	00	15	56	10 NM		0969.5	- 4.0		10	23			
WSVR	11	46.6 N	51.8 W	00	24	M 45	10 NM	02	0999.2	4.0	2.0	6	14.5	24	12	32.5
ZCKF	11	46.6 N	56.0 W	00	27	M 33	10 NM	02	0986.9	0.6	0.0	6	16.5	22	9	32.5
ESNJ	11	38.0 N	18.8 W	12	29	M 50	1 NM	25	0999.3	14.5	15.7	6	11.5	28	10	23
GPEN	11	46.3 N	27.8 W	12	31	M 30	10 NM	02	1011.0	14.0		8	13	28	11	39
UWPU	11	39.5 N	23.3 W	12	01	25	5 NM	02	1012.0	12.2	15.5	9	32.5			
ELAD4	11	40.7 N	20.4 W	18	32	55	10 NM	18	1009.0	16.0	14.0	8	14.5	32	9	16.5
PEJS	11	09.8 N	41.5 W	18	05	M 54	> 25 NM	01		26.4						
WSDF	12	31.0 N	64.3 W	00	17	22	10 NM	01	1013.2	18.3		4	11.5	28	12	34.5
GVHY	12	44.1 N	58.5 W	06	34	M 55	2 NM	71	0990.5	- 2.5	1.5	8	10			
GCJH	12	37.4 N	14.1 W	12	01	M 37	10 NM	15	1007.8	15.5	16.0	6	10	34	10	32.5
GXUA	12	34.2 N	13.1 W	12	31	M 31	> 25 NM	02	1004.5	15.5	18.0	4	10	32	0	32.5
KRTR	12	46.7 N	48.8 W	15	25	M 56	5 NM	03	0995.2	3.0	1.4	9	11.5			
TFXO	12	53.4 N	43.6 W	15	22	52	2 NM	85	0990.3	2.0						
VYSM	12	46.7 N	62.0 W	15	02	71										
UWE*	13	43.8 N	40.6 W	00	22	52			0998.6	2.0	12.6					
KFDZ	13	38.7 N	53.4 W	12	31	40	10 NM	16	1005.5	7.2	17.2	7	10	30	13	41
GVHC	13	41.1 N	45.7 W	18	30	M 52	5 NM	90	1007.8	7.8		10	29.5			
SLPN	13	44.7 N	44.0 W	18	02	M 72	.25 NM	63		0.9	14.0					
ULWV	13	54.6 N	08.4 W	18	18	25	10 NM		1028.1	2.5	5.0	0	34.5			
ELAD4	13	35.6 N	34.6 W	21	22	50	5 NM	18	1016.0	21.0	18.0	6	11.5	22	7	14.5
GVHC	14	41.0 N	46.5 W	00	30	M 52	5 NM	81	1020.2	6.0		8	23	27	10	29.5
OWGW	14	59.7 N	41.1 W	00	26	72	5 NM		0992.2	- 0.2	2.8	4	10			
UZNP	14	41.0 N	39.4 W	00	26	M 58	.25 NM	64	1001.3	8.0	17.0	8	14.5			
DJJE	14	44.3 N	41.5 W	06	30	M 60	2 NM	18	1010.0	6.0		2	13	27	6	10
GPUP	14	36.7 N	34.5 W	06	29	M 45	5 NM	02	1014.9	14.2	16.0	4	16.5	27	7	24.5
GRHP	14	46.8 N	37.8 W	06	04	M 50	2 NM	61	0992.3	10.5		4	10	04	6	19.5
VOBJ	14	47.2 N	51.4 W	06	29	M 48	5 NM	02	1022.0							
DILL	14	38.1 N	33.6 W	12	28	M 37	10 NM	25	1017.5	14.0		6	16.5	29	12	46
GPEN	14	44.1 N	43.4 W	12	31	M 42	5 NM	02	1020.9	4.5		10	11.5	32	12	26
UWDP	14	43.8 N	28.5 W	12	23	M 43	5 NM	07	0994.1	15.0	16.0	10	24.5			
WHMK	14	23.7 N	87.9 W	12	30	M 48	10 NM	02	1009.0	18.0	28.3	6	13	32	6	6.5
KFDZ	14	39.4 N	62.8 W	18	19	40	5 NM	60	1003.0	15.6	15.6	5	8	20	14	32.5
UUDO	14	41.4 N	33.2 W	18	31	M 39	5 NM	02	1008.1	10.2	15.0	11	19.5	31	14	39
CGDJ	15	38.4 N	73.5 W	00	02	M 50	1 NM	81	0990.9	5.5	11.0	5	8	17	6	10
VRCO	15	40.7 N	25.3 W	06	31	M 38	10 NM	25	1010.2	12.4	15.0	4	8	30	10	32.5
7LON	15	48.1 N	49.4 W	12	34	74										
EWJR	15	51.7 N	23.6 W	12	29	M 48	5 NM	01	0987.7	5.5	16.5	20	19.5			
GOZD	15	44.6 N	21.6 W	12	29	37	10 NM	81	1001.0	12.0		5	10	29	8	32.5
KHLX	15	47.6 N	22.3 W	12	28	45	10 NM	03	0992.0	10.6	11.2	6	11.5	26	18	28
LGNP	15	36.1 N	67.8 W	12	27	M 60	5 NM	25	1002.6	13.2	20.1	6	6.5	27	18	26

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
ATLANTIC	JAN.															
DZHR	15	39.2 N	73.0 W	18	30	M 48	5 NM	21	1010.0	0.5	0.0	8	16.5	29	10	23
FNBA	15	49.2 N	58.2 W	18	09	M 75	.25 NM	81	0964.1	- 2.1	1.1	4	11.5			
GRHN	15	37.9 N	67.0 W	18	26	M 44	2 NM	25	1001.3	9.6	18.2	7	24.5			
GVHY	15	44.1 N	58.5 W	18	23	M 60	1 NM	10	0968.7	5.2		10	23			
GVOH	15	40.5 N	65.1 W	18	27	M 55	2 NM	60	0993.6	6.5	12.0	9	32.5	21	8	14.5
RIGG	15	44.0 N	59.6 W	18	22	M 60	1 NM	10	0966.9	4.5		9	26	20	10	39
WNDJ	15	39.9 N	69.7 W	18	27	50			1001.7	0.0	7.2	6	13	27	6	19.5
WVFN	15	46.9 N	48.7 W	18	19	M 48	.25 NM	61	0982.3	6.0	2.3	9	18			
GOZD	16	43.9 N	23.9 W	00	32	28	10 NM	15	1012.3	12.1	14.5	6	10	32	8	32.5
GVHY	16	44.1 N	58.5 W	00	26	M 60	1 NM	10	0980.1	2.0		7	10	23	10	23
LGNR	16	36.9 N	63.6 W	00	26	M 40	5 NM	25	1011.6	12.5	20.0	8	6.5	28	12	32.5
RIGG	16	44.0 N	59.6 W	00	27	M 50			0977.0	2.0		9	16.5	24	14	23
CYML	16	47.5 N	59.7 W	06	32	M 59	200 YD	75	0976.0							
DHES	16	47.3 N	50.2 W	12	23	60	2 NM		0968.0	- 1.0	1.0	9	3			
FNPH	16	18.1 N	59.4 W	12	02	53	10 NM		1018.0		26.0	6	10			
UESJ	16	57.2 N	45.6 W	12	23	39	5 NM		0979.3	4.0	8.0	15	42.5			
UGRK	16	46.5 N	53.7 W	12	25	M 47	2 NM	07	0973.0	0.2	6.0	16	26			
WVFN	16	46.9 N	48.7 W	15	23	60	2 NM		0975.2	1.1	0.8	10	26			
6ZKM	16	44.9 N	50.2 W	18	27	M 56	.5 NM	10	0986.8	1.4						
GRHN	16	39.9 N	59.9 W	18	29	58	10 NM		1014.0	8.0	14.0	5	16.5			
GUUP	16	42.4 N	45.0 W	18	27	M 55	2 NM	15	0997.4	11.1	16.6	3	13	27	10	23
KRTB	16	46.7 N	48.8 W	18	25	M 67	.25 NM	70	0973.4	1.0						
URJP	16	47.2 N	45.9 W	18	32	66	2 NM		0973.5	3.0	9.1	14	21			
VOBJ	16	46.0 N	48.8 W	18	23	M 55	.5 NM	10	0978.0							
KRTB	17	46.7 N	48.8 W	03	29	M 54			0994.3	1.3	1.9	11	18	25	11	14.5
WVFN	17	46.9 N	48.7 W	03	28	56	5 NM	02	0993.4	1.1	0.8	4	1.5	23	10	23
KHLX	17	45.8 N	37.0 W	06	22	53	5 NM	02	0983.4	7.7	12.8	11	26	24	13	36
UUDJ	17	42.0 N	37.0 W	06	31	45	10 NM	01	1002.5	12.4	16.0	5	10	27	12	29.5
VOBJ	17	46.0 N	48.8 W	06	28	50	5 NM	02	1003.0							
EREU	17	40.1 N	30.0 W	12	27	M 39	10 NM	01	1012.1	15.9	15.0	9	34.5			
GBXR	17	40.8 N	37.9 W	12	27	M 44	10 NM	02	1012.2	13.7	16.0	5	13	27	12	42.5
GUUR	17	43.9 N	40.4 W	12	29	M 54	5 NM	16	1007.5	9.2	15.0	4	13	29	13	32.5
3EHV	17	44.2 N	25.4 W	18	26	M 51	.5 NM	81	1001.5	12.0	14.0	4	8	27	13	24.5
BBXX	17	41.2 N	36.5 W	18	28	M 37	10 NM	15	1015.1	12.7	16.0	5	13	28	15	42.5
GOZD	17	41.0 N	33.0 W	18	28	38	10 NM	15	1012.0	15.5	17.0	5	16.5	28	6	32.5
GRHP	17	53.6 N	14.0 W	18	19	M 46	2 NM	51	0996.3	11.1				19	8	28
KFEY	17	46.5 N	28.2 W	18	26	40	5 NM	25	0989.5	11.5	12.8	5	14.5	26	9	37.5
VGLN	17	43.3 N	65.4 W	18	30	M 50	.5 NM	86	1004.0							
WMRJ	17	38.3 N	71.4 W	18	28	50			1018.6	6.5	9.5	3	10	28	7	19.5
CG2612	18	43.4 N	65.6 W	00	31	M 55	.25 NM	74	1009.0							
GOZD	18	40.6 N	33.8 W	00	27	38	10 NM	01	1017.7	15.5	17.0	5	16.5	28	6	32.5
KFEY	18	46.2 N	29.3 W	00	26	50	5 NM	25	0990.7	11.5	12.8	5	14.5	26	9	24.5
VCGK	18	43.6 N	68.2 W	00	30	M 52	1 NM	12	1032.0	-16.4	5.0					
WVFN	18	46.9 N	48.7 W	03	13	54	2 NM	63	0990.6	3.0	1.5	9	13			
WYG744	18	44.0 N	59.6 W	03	27	M 50	1 NM	86	1000.3	-10.6		6	11.5			
S6CC	18	37.4 N	64.8 W	05	29	M 41	10 NM	02	1019.0	4.0	20.0	8	24.5	29	9	26
CGBT	18	48.8 N	67.6 W	15	27	M 48	.25 NM	71	1003.4	-25.1						
CG103	18	45.1 N	61.7 W	18	24	M 50	1 NM	26	1006.0							
DJJE	18	40.6 N	58.1 W	18	27	M 50	2 NM	90	1010.0	2.4						
FNBA	18	49.1 N	58.3 W	18	24	M 55	.25 NM	74	0980.5	-17.4	0.4	3	3			
GOOF	18	47.0 N	50.5 W	18	25	M 65	5 NM	86	0993.2		5.0	8	39	25	8	23
GPEN	18	45.0 N	51.5 W	18	27	M 60			0998.5	- 5.6		10	16.5	27	10	16.5
GRNN	18	45.2 N	47.3 W	18	26	M 44	10 NM	86	1000.8	- 1.0	5.2	6	29.5			
GVHY	18	44.1 N	58.5 W	18	27	M 55	2 NM	71	1003.1	-11.0		10	24.5			
KRTB	18	46.7 N	48.8 W	18	25	M 55	10 NM	86	0996.1	- 7.4	0.6	11	26			
RIGG	18	44.0 N	59.6 W	18	26	M 53	1 NM	22	1003.9	-11.7		6	14.5			
VCJC	18	47.1 N	61.1 W	18	27	M 50	.25 NM	71	0995.0							
VOBJ	18	46.0 N	48.4 W	18	25	60	5 NM	02	0998.0							
VYQJ	18	46.3 N	60.2 W	18	26	M 50	2 NM		0997.0							
FNBA	19	49.1 N	58.3 W	00	22	M 50	.25 NM	75	0977.5	-13.3	0.8	2	5			
GHVY	19	44.1 N	58.5 W	00	27	M 65	2 NM	85	1002.5	- 8.0		10	23			
URJ*	19	47.5 N	50.2 W	00	24	48	.5 NM		0991.6	- 8.7	1.0	14	24.5			
URJP	19	46.4 N	45.5 W	00	26	47	5 NM		0997.9	0.5	3.8	14	24.5			
VCJC	19	47.1 N	61.8 W	00	27	M 55	200 YD	73	0995.0							
RIGG	19	44.0 N	59.6 W	03	27	M 55	5 NM	26	1002.7	- 8.4		6	11.5			
WVFN	19	46.9 N	48.7 W	03	23	48	2 NM	71	0994.9	- 7.0		11	24.5			
GVHY	19	44.1 N	58.5 W	06	28	M 56	2 NM	71	1002.1	- 7.8		12	26			
PCVK	19	50.7 N	44.5 W	06	19	M 52	.25 NM	73	0988.0	- 6.0	11.5					
VOBJ	19	46.6 N	47.7 W	06	23	M 50	.5 NM	73	0997.0							
DJJE	19	40.3 N	60.3 W	12	28	50	10 NM		1015.8	4.2	14.4	8	19.5			
DZDV	19	45.9 N	42.7 W	12	24	M 50	5 NM	85	1004.0	5.0	10.0	6	16.5	24	9	26
UITT	19	12.8 N	75.2 W	12	05	70	10 NM		1015.2		28.0	10	11.5			
UUDJ	19	42.3 N	48.7 W	12	27	M 23	10 NM	01	1007.1	4.0	14.0			25	15	32.5
KRTB	19	46.7 N	48.8 W	15	26	M 50	.25 NM	86	0996.0	- 3.6						
GOOF	19	46.5 N	52.8 W	18	25	M 65	2 NM	86	0992.0	- 4.5	6.0	8	24.5	25	11	23
GPEN	19	45.5 N	53.4 W	18	26	M 52	2 NM	70	0995.6	- 3.5		8	16.5	26	8	16.5
KHLX	19	43.4 N	50.8 W	18	27	42	10 NM	02	1004.4	3.4	3.9	6	16.5	25	13	28
ONNE	19	44.1 N	53.5 W	18	28	M 45	10 NM	02	1007.6	6.6	10.8	9	16.5	29	14	32.5
PJAE	20	14.7 N	71.5 W	00	27	M 48	10 NM	02	1015.5	25.5	25.6	5	16.5	08	6	16.5
GBRM	20	35.0 N	42.8 W	12	01	79		02	1021.1		18.4	6	6.5	29	7	13

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
ATLANTIC	JAN.															
KRTB	20	46.7 N	48.8 W	12	25	M 56	.25 NM									
KSLB	20	35.5 N	64.6 W	12	17	M 10	5 NM	20	1016.1	13.5	17.2	3	0	02	0	32.5
KFEY	20	43.7 N	46.9 W	18	28	45	10 NM	27	1011.2	4.0	6.6	6	13	28	9	24.5
PCVK	20	47.4 N	49.2 W	18	24	M 52	10 NM	01		- 4.0	1.5	8	16.5	24	10	19.5
VOBJ	20	47.4 N	51.4 W	18	25	M 50	5 NM	10	1003.0							
3FWT	21	53.6 N	11.5 W	00	27	32	5 NM			9.8		8	34.5			
DHDW	21	47.5 N	23.4 W	09	28	M 22	10 NM	16	1022.2	11.5	12.0	4	5	26	0	32.5
TFMA	21	52.8 N	45.4 W	09	24	M 52	5 NM	26		2.1						
PDCU	21	40.4 N	38.5 W	12	13	M 58	10 NM	03	1014.0	13.5	15.5	5	8			
PDHU	21	39.0 N	48.2 W	12	21	M 50	2 NM	95	0989.0							
KGYE	21	41.2 N	45.0 W	17	22	48	2 NM	07	0970.2	14.0	15.8	6	13	XX	8	16.5
DEBS	21	40.3 N	47.4 W	18	28	M 52	2 NM	07	0999.0	10.4	15.3	11	19.5	28	14	29.5
EIJG	21	39.9 N	40.2 W	18	23	60	1 NM	65	1002.0	15.0	14.0	3	10	23	10	19.5
KFCX	22	42.5 N	53.0 W	00	29	49	5 NM	24	1008.0	- 3.3	12.2	6	14.5	29	8	14.5
URC*	22	44.9 N	50.7 W	00	18	52	10 NM		0999.1	4.2	1.0	9	10			
WVFN	22	46.9 N	48.7 W	09	24	M 64	1 NM	72	0996.2	- 3.8		8	14.5			
FNZE	22	50.3 N	30.7 W	18	22	M 60	2 NM	10	1002.8	10.9						
OLJL	22	45.1 N	43.4 W	18	25	M 43	2 NM	72	1003.0		14.0	6	8	25	10	29.5
VRKB	22	39.7 N	54.5 W	18	30	M 28	10 NM		1010.9	5.6	17.0	5	10	30	10	32.5
OUNU	23	58.5 N	42.0 W	06	03	M 60	1 NM	80	0972.3	1.6		5	19.5			
4XSX	23	37.4 N	42.3 W	12	33	M 60		82	0987.5	10.0	17.0	7	19.5	30	10	13
GZML	23	51.3 N	26.0 W	12	18	M 20	10 NM	02	1008.8	11.2	13.0	3	6.5	25	8	32.5
UUPF	23	24.3 N	63.7 W	12	06	72	10 NM	05								
UVEL	23	35.8 N	39.4 W	12	20	54	5 NM	02	0993.7	19.0	16.5	21	13	20	25	13
VCLW	23	38.7 N	60.1 W	12	35	M 58	2 NM	83	1026.0							
VRKB	23	39.7 N	59.2 W	12	35	M 37	10 NM	27	1024.5	1.9	14.0	6	10	30	10	32.5
FCEN	23	39.9 N	39.9 W	15	32	M 70	50 YD									
DEBS	23	44.6 N	34.7 W	18	17	M 48	2 NM		0986.8	16.1						
EWVO	23	35.5 N	52.1 W	18	33	M 50	5 NM	16	1008.9	8.0	18.0	6	10	33	6	13
GONS	23	33.3 N	50.5 W	18	31	M 48	10 NM	18	1012.4	9.5		8	19.5	32	9	26
GPOM	23	20.4 N	72.5 W	18	07	M 72	> 25 NM	01	1017.8	27.2	26.2	4	6.5	08	6	8
GSES	23	39.7 N	35.5 W	18	21	M 50	2 NM	15	0993.5	15.4	15.7	8	29.5	20	10	23
ZCSN	23	31.8 N	50.6 W	18	32	M 50	5 NM	81	1017.3	11.5	19.1	7	6.5	30	13	18
KGJD	24	33.1 N	48.8 W	00	32	M 46	5 NM	80	1015.0	10.0	20.0	7	19.5	31	8	24.5
PDHU	24	42.2 N	35.4 W	00	22	M 55			0997.0							
VRKC	24	40.6 N	46.6 W	00	30	M 52	10 NM	81	1007.0	4.3	15.8	8	19.5	01	10	13
CYML	24	44.8 N	65.8 W	06	15	M 52	1 NM	64	0997.0							
DEBS	24	47.2 N	31.0 W	12	24	24	10 NM		1012.0	10.5	12.5	4	11.5	23	12	34.5
DZDV	24	41.3 N	62.4 W	12	15	M 45	.25 NM	81	1002.5	11.0	14.0	5	13	18	9	26
JONP	24	36.3 N	39.6 W	12	36	M 49	200 YD	60	1000.5	11.0						
KHNB	24	30.2 N	45.1 W	12	33	45	10 NM	25	1014.9	16.2	20.0	5	13	33	14	26
VRGW	24	39.2 N	64.3 W	12	20	M 50	1 NM	08	0997.3	15.5						
YTTV	24	29.4 N	29.0 W	12	16	M 48	5 NM	02	1016.4	21.0	22.5	5	8	14	5	8
CGDT	24	48.4 N	62.0 W	15	13	M 52	.25 NM	73		- 0.5		10	24.5			
TFMA	24	44.9 N	61.2 W	15	14	M 52	200 YD	63	0988.9	4.1						
SMPO	24	33.7 N	66.5 W	18	19	M 51	5 NM	02	1007.0	20.0		6	13	18	8	19.5
CGDJ	24	42.6 N	60.5 W	18	21	M 55	.5 NM		0987.7	11.0	7.0	8	19.5	15	6	14.5
GSES	24	38.4 N	39.9 W	18	36	M 42	5 NM	02	1008.9	12.1	16.7	7	29.5			
GVHY	24	44.1 N	58.5 W	18	18	M 55	2 NM	61	0992.0	6.8	2.5	9	16.5			
GZZS	24	23.4 N	42.9 W	18	34	M 30	10 NM	02	1016.0	21.0	24.2	3	6.5	34	7	32.5
SDGT	24	50.7 N	28.6 W	18	23	30	10 NM		1012.3	10.8	8.1	5	11.5	23	10	44
VCSZ	24	45.8 N	57.0 W	18	14	M 52	.5 NM	10	0996.0							
WSVB	24	38.5 N	38.4 W	18	36	M 52	5 NM	80	1003.5	12.0	16.0	6	6.5	36	12	16.5
3EHV	25	39.7 N	59.2 W	00	18	M 58	50 YD	64	0996.0	12.5	14.5	5	8	25	10	14.5
GONQ	25	44.4 N	53.1 W	06	17	M 55	2 NM	63	0996.7	6.8	3.8	8	16.5	18	8	29.5
GZZS	25	24.6 N	39.5 W	06	33	M 32	> 25 NM	01	1014.5	21.0	23.2	5	8	33	9	32.5
LFEI	25	36.6 N	40.1 W	06	35	55	10 NM	03	1008.0	15.0	15.0	12	32.5			
VOBJ	25	46.3 N	49.2 W	12	17	M 50	.5 NM	65	1004.0							
KRTB	25	46.7 N	48.8 W	15	17	M 51	1 NM		0998.8	4.0	1.2	8	14.5			
WVFN	25	46.9 N	48.7 W	15	15	M 58	1 NM	63	0999.6	3.4	1.0	11	13			
GUZG	25	26.3 N	33.4 W	18	27	M 13	10 NM	15	1011.1	19.0	21.6	2	3	30	6	32.5
DHHZ	26	32.6 N	35.5 W	12	32	M 48	10 NM	01	1002.5	18.8	18.0	5	6.5	31	8	8
WHGA	26	44.2 N	61.8 W	12	25	23	10 NM	77	1010.8	6.1	0.6	3	5	25	10	54
UVEL	27	24.5 N	64.7 W	06	02	58			1012.7		22.0					
WSNH	27	33.7 N	65.9 W	12	34	M 50	2 NM	15	1000.4	11.0	18.0	5	19.5	34	7	23
WSVB	27	39.7 N	60.9 W	18	35	M 55	2 NM	07	0998.0	13.0	17.0	8	16.5	36	10	23
WSVB	28	39.8 N	62.3 W	00	36	M 45	2 NM	07	1010.3	13.0	17.0	8	16.5	36	10	24.5
GVHY	28	44.1 N	58.5 W	03	01	55	5 NM		1004.0	- 2.5		8	18			
WVFN	28	46.9 N	48.7 W	03	15	M 53	50 YD	63	0997.7	5.5	1.3	7	10			
EWVO	28	36.1 N	52.7 W	06	28	48	2 NM		1006.5	19.0	17.5	6	10	25	6	13
GONO	28	48.6 N	30.0 W	06	16	M 20	5 NM	50	1029.8	13.0	12.7	5	10	27	10	32.5
FNBA	28	46.6 N	53.0 W	12	02	M 50	200 YD	25	0990.5	- 2.3		3	6.5	03	8	16.5
GUEG	28	59.9 N	00.5 W	12	28	M 55	2 NM	25	0990.1	4.9	9.0	12	21	31	10	16.5
UUSU	28	50.2 N	01.9 W	12	25	78	10 NM	00	1027.6	9.0	9.2	7	8	00	0	0
PLAT	28	58.1 N	03.1 W	18	26	48	5 NM		1008.9	6.1		7	10			
ULYN	28	08.3 N	43.6 W	18	10	M 50				26.1						
URJP	28	46.5 N	45.7 W	18	18	50	5 NM		0996.6	7.0	3.6	15	26			
UWEP	29	45.2 N	49.1 W	00	30	45			1009.5	5.0	8.0	16	24.5			
WVFN	29	46.9 N	48.7 W	00	29	M 48	5 NM	00	1001.1	0.4	1.1	9	19.5			
GVHY	30	44.1 N	58.5 W	00	29	M 50	10 NM	02	1014.3	- 0.6	1.6	9	16.5			

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
ATLANTIC	JAN.															
PJAE	30	22.7 N	78.6 W	12	09	M 62	10 NM	02	1020.2	23.0	25.0	6	8	09	5	6.5
WVFN	30	46.9 N	48.7 W	12	26	M 48	5 NM	03	1013.0	- 2.6	0.2	8	13			
FNBA	30	52.8 N	53.5 W	15	31	M 50	1 NM	86	1000.0	- 9.6		3	6.5	31	6	14.5
SLPN	30	49.3 N	43.1 W	18	27	M 72	2 NM	75	1001.0	3.0	7.3	18	19.5	27	18	19.5
VOBJ	30	47.8 N	48.2 W	18	26	M 50	2 NM	16	1015.0							
YTTW	30	29.7 N	40.0 W	18	05	M 48	10 NM	02	1022.9	20.6	20.0	7	6.5	28	7	5
VRFZ	31	48.7 N	39.3 W	06	25	M 48	10 NM	70	1012.9	3.5						
C6YJ	31	46.9 N	59.7 W	18	29	54	5 NM	02	1013.0							
KRTB	31	46.7 N	48.8 W	18	19	M 48	.5 NM	71	1007.5	0.6	0.3	5	5	27	9	6.5
SLPN	31	47.7 N	49.0 W	18	21	M 72	1 NM	75	1004.5	0.0	1.5	18	19.5	21	18	19.5
WVFN	31	46.9 N	48.7 W	18	18	M 52	.25 NM	73	1007.7	0.4	0.1	7	11.5			
	FEB.															
KRTB	1	46.7 N	48.8 W	00	27	M 50	10 NM	02	1007.5	0.5	0.1	9	18			
VCSZ	1	46.2 N	54.7 W	00	30	M 48	10 NM	03	1017.0							
VOBJ	1	47.0 N	48.0 W	00	26	M 55	10 NM	02	1005.0							
WVFN	1	46.9 N	48.7 W	03	28	62	2 NM	85	1009.8	- 1.0	0.4	9	23			
9VBS	1	46.6 N	36.4 W	12	25	M 60	5 NM		0988.5	7.5	21.0	4	19.5	26	7	32.5
EPEA	1	52.1 N	31.4 W	12	14	M 41	.5 NM	80	0984.6	7.6	8.6	8	16.5	26	15	26
FNLC	1	09.8 N	56.5 W	12	23	54	10 NM	02	1012.5	26.5	28.5	6	6.5			
SFHN	1	45.3 N	34.0 W	12	28	M 55	10 NM	02	1000.0	12.0						
UOUJ	1	44.5 N	40.6 W	12	28	25	1 NM	62	1018.1	5.0	7.0	17	26			
VRFZ	1	47.0 N	43.7 W	12	31	M 56	5 NM	01	1016.1	1.0	4.0	6	6.5	31	6	32.5
C7C	1	52.7 N	35.5 W	18	33	M 60	2 NM	63	0984.1	2.9	6.8	17	26			
GVHY	2	44.1 N	58.5 W	00	24	M 48			1008.8	7.3		8	13			
UFJI	2	19.0 N	67.7 W	00	07	48	5 NM		1018.9	26.2	26.0	7	8			
UWEP	2	54.1 N	27.5 W	00	10	48			0979.0	8.0		16	23			
ESGK	2	54.0 N	31.0 W	06	35	50	.5 NM		0981.4	5.0						
UKPE	2	43.9 N	30.9 W	06	29	M 33	5 NM	21	1012.7	9.5	14.0	12	24.5			
VYKF	2	46.7 N	54.5 W	06	27	M 58	10 NM	01	1000.0							
KPTB	2	46.7 N	48.8 W	09	26	M 55	5 NM	50	0997.0	2.0		8	14.5			
FNHH	2	44.7 N	23.9 W	12	29	M 38	5 NM	50	1004.5	10.5	12.8			28	12	29.5
GPXS	2	41.0 N	50.6 W	12	27	M 50	5 NM	07	1023.5	12.0	13.0	6	10	27	5	10
GCFE	2	44.5 N	22.6 W	12	26	M 45	10 NM	15	1002.3	11.4	13.6	2	6.5	27	15	39
UPJO	2	44.5 N	47.7 W	12	24	50	2 NM	55	1007.2	4.6	1.8	12	23			
USKE	2	48.7 N	28.4 W	12	31	M 52	2 NM	71	0991.3	6.3	12.7	10	23	30	9	19.5
VPFZ	2	43.3 N	48.5 W	12	27	M 52	5 NM	03	1011.3	4.5	9.0	4	6.5	27	6	32.5
9VBS	2	44.3 N	39.5 W	18	28	M 55	5 NM	60	0991.5	9.0	19.0	6	16.5	28	6	29.5
DEBS	2	45.6 N	18.3 W	18	24	M 50	5 NM		0999.0	11.1	12.8	5	11.5	26	11	19.5
GPDT	2	40.0 N	43.9 W	18	29	50	5 NM		1019.8	12.1	17.0	7	16.5	29	11	24.5
GLNE	2	44.7 N	16.9 W	18	24	M 20	10 NM	02	1001.8	11.2	12.9	4	6.5	27	11	26
GONR	2	45.5 N	37.4 W	18	26	M 44	2 NM	64	0988.0	10.0	13.2	4	16.5	26	11	32.5
GOTC	2	39.5 N	28.0 W	18	28	17	10 NM		1013.9	13.8	15.0	4	6.5	31	14	32.5
GYUD	2	50.3 N	20.0 W	18	25	M 35	10 NM	18	0979.6	9.5	11.0	3	6.5	24	13	32.5
KPHZ	2	47.5 N	18.2 W	18	25	M 35	5 NM	01	0995.0	10.0		1	5	25	XX	32.5
ONWO	2	46.6 N	35.7 W	18	27	M 45			0960.6	8.0	12.7	8	29.5			
RIGG	2	47.0 N	48.8 W	18	32	M 48	5 NM	02	1013.5	- 0.4		10	26			
SEBA	2	44.4 N	22.9 W	18	27	M 44	5 NM	02	1001.0	10.7		11	26	28	11	19.5
SEDT	2	45.9 N	10.2 W	18	21	M 58	5 NM	80	1001.2	11.5	12.1			18	5	6.5
VOBJ	2	46.9 N	47.8 W	18	31	M 60	.5 NM	07	1012.0							
WVFN	2	46.9 N	48.7 W	18	32	M 58	1 NM	06	1013.7	0.2	0.5	9	23			
ESNJ	3	43.0 N	34.3 W	00	27	48	2 NM		0990.9	13.0		8	23	27	13	26
KPHZ	3	47.5 N	18.4 W	00	24	M 30	5 NM	81	0995.0	10.6		1	5	26	14	32.5
WVFN	3	46.9 N	48.7 W	00	32	52	10 NM		1026.9	- 1.3	0.2	9	23			
FNIG	3	04.5 N	12.7 W	06	02	79		13	1010.0		28.9					
GRDT	3	40.4 N	42.7 W	06	32	M 65	5 NM	15	1022.0	8.4	19.0			32	12	42
WNDJ	3	42.4 N	34.7 W	06	30	M 55	5 NM	13	0990.5	10.6	14.4	6	13	30	6	32.5
D5OY	3	47.0 N	43.0 W	12	32	60	5 NM		1021.0							
FNPH	3	25.6 N	21.6 W	12	30	M 48		25	1010.5	13.2	16.2	6	16.5	31	10	26
GCFE	3	44.3 N	25.0 W	12	22	M 24	10 NM	02	0984.6	10.4	13.5	1	3	30	12	26
GYEW	3	38.9 N	42.0 W	12	33	M 50		81		9.1	17.0	9	28	34	9	24.5
WLGF	3	43.7 N	42.6 W	12	32	55	2 NM	51	1024.1	6.7	15.0	12	24.5	32	10	32.5
DJJB	3	37.4 N	31.4 W	15	32	M 37	10 NM	02	1002.8	12.6	15.6	6	21	31	10	29.5
EPEA	3	46.6 N	28.6 W	15	31	M 39	5 NM	27	0982.7	7.8	13.0	11	16.5	30	17	31
ATZN	3	42.0 N	38.0 W	18	33	M 60			1010.0							
C7C	3	52.7 N	35.5 W	18	32	M 58	1 NM	25	0992.7	2.0	6.7	17	32.5	33	19	36
DGLU	3	37.6 N	38.2 W	18	35	M 52	10 NM	25	1019.5	11.5	16.0	8	11.5	34	7	19.5
FNZE	3	45.5 N	41.3 W	18	33	45	5 NM		1022.1	5.1	13.0	10	29.5			
GPXP	3	39.9 N	27.2 W	18	33	M 33	10 NM	60	0994.8	11.9	16.0	3	8	29	6	32.5
GONP	3	44.1 N	29.7 W	18	32	M 37	10 NM		0993.2	7.5	13.8	6	16.5	32	9	29.5
GYZK	3	34.2 N	38.4 W	18	33	M 45	5 NM	03	1021.9	14.9		15	46			
KFCV	3	42.7 N	45.8 W	18	35	41	10 NM	02	1035.2	6.5	12.3	5	10	36	6	24.5
KFEZ	3	46.5 N	14.6 W	18	18	40	5 NM	80	0993.0	12.8	14.5	8	19.5	22	10	24.5
KPGQ	3	35.7 N	34.9 W	18	30	55	10 NM	18	1013.5	12.8	15.6	5	18	31	8	34.5
SEDT	3	40.6 N	15.4 W	18	16	M 72	2 NM	81	0999.0	15.5	14.0	5	6.5	21	8	13
VCBD	3	55.5 N	17.2 W	18	13	M 50	2 NM	60	0981.9	11.0	10.0	6	10	14	7	23
ESGK	4	53.1 N	36.1 W	00	32	47	.5 NM		0998.6	3.0	7.5	30	39			
FNRS	4	34.8 N	32.4 W	00	33	36	5 NM		1013.4	12.8	15.9	7	14.5	32	12	49
GRJ	4	17.7 N	19.2 W	00	34	27	10 NM	01	1005.4	12.2	15.0	12	26			
KPGQ	4	34.7 N	35.2 W	00	31	55	10 NM	02	1017.9	12.3	17.7	5	18	31	8	24.5
USKE	4	48.7 N	28.4 W	00	32	M 48	5 NM	03	0987.3	7.6	12.4	10	23	31	9	19.5
WLGF	4	45.5 N	39.8 W	00	32	50	5 NM		1021.5	6.1	13.3	16	32.5			
DEJL	4	35.8 N	40.6 W	12	35	30	10 NM		1031.8	14.2	11.6	6	10	35	14	26

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
ATLANTIC	FEB.															
ESNJ	4	43.2 N	35.1 W	12	33	31	10 NM		1021.5	8.0	11.0	8	11.5	33	14	26
FNPH	4	31.8 N	37.0 W	12	35	M 40	10 NM	01	1027.4	15.4	19.1	12	29.5			
GPXP	4	39.3 N	29.2 W	12	36	M 37	5 NM	60	1012.1	11.5	16.0	4	10	31	7	29.5
GYEW	4	35.4 N	34.3 W	12	35	M 44	10 NM	80	1022.0	13.8	19.0	9	26	34	13	32.5
ONBI	4	48.2 N	23.5 W	12	31	M 46	10 NM		0995.7	9.8	12.0	8	6.5	28	11	39
ONMR	4	37.0 N	39.8 W	12	35	M 37	5 NM	03	1030.0	12.5				34	8	28
SEBA	4	41.6 N	30.6 W	12	34	M 37	10 NM	25	1014.5	9.4		12	26			
UVNG	4	28.3 N	35.6 W	12	33	33	5 NM		1028.7		15.0	14	39			
ZCKB	4	48.9 N	19.5 W	12	26	M 18	10 NM	25	0991.9	11.4	14.0	4	6.5	26	12	24.5
CGDJ	4	46.7 N	52.7 W	18	22	55	.25 NM			4.5						
FPGA	4	41.5 N	10.6 W	18	17	55	1 NM		1011.0	14.5	13.0	6	6.5	20	6	5
GLNE	4	38.8 N	20.8 W	18	26	M 13	10 NM	02	1008.9	14.1	15.2	3	3	29	11	26
GWEL	4	47.6 N	26.0 W	18	32	M 37	10 NM	25	1007.1	8.6	13.1	4	8	32	10	36
GYZW	4	31.6 N	34.0 W	18	36	M 42	5 NM	15	1021.5	16.3		12	42.5			
KFEM	4	48.4 N	24.8 W	18	34	40	10 NM	01	1004.4	8.3	13.0	7	23	31	9	29.5
PDKM	4	31.7 N	37.1 W	18	36	M 40	10 NM	02	1026.2	16.4	18.6	7	14.5	36	11	31
PESD	4	46.0 N	18.7 W	18	28	M 48	10 NM		1003.0	11.0						
ULBI	4	25.2 N	40.0 W	18	03	29	10 NM		1025.1	21.1	23.0	7	8	36	12	26
ZCUT	4	33.0 N	25.6 W	18	05	20	> 25 NM	25	1011.3	13.0	18.0	4	5	31	14	29.5
GBZU	5	42.8 N	10.2 W	06	20	M 25	5 NM		1017.6	13.5	13.5	3	6.5	28	8	24.5
GYEW	5	34.7 N	27.9 W	06	36	M 33	10 NM	01	1019.0	14.5		8	14.5	33	12	29.5
VCRJ	5	36.0 N	08.8 W	06	01	M 65		02	1020.0		17.0					
ZCUT	5	32.4 N	28.5 W	06	36	28	> 25 NM	15	1018.8	14.5	18.5	6	8	35	14	24.5
GYZW	5	30.2 N	30.7 W	12	01	M 37	10 NM	02	1022.6	17.0	19.5	10	32.5			
JMLC	5	48.5 N	40.7 W	12	27	M 38	5 NM	02	1012.0	8.0	11.0	4	8	29	8	24.5
PDKM	5	31.9 N	33.3 W	12	36	M 27	10 NM	01	1028.1	16.2	18.6	6	11.5	36	11	24.5
SMUL	5	47.8 N	20.3 W	18	27	35	10 NM	00	0998.5	13.0	9.0	6	24.5	24	6	21
JPNA	5	53.1 N	27.1 W	18	26	M 49	1 NM	25	0980.5	7.2	11.2	3	6.5	27	5	14.5
KFEM	5	45.7 N	33.1 W	18	27	40	5 NM	02	1010.5	13.4	14.0	10	26	27	14	13
KPHZ	5	41.0 N	25.0 W	18	23	M 15	10 NM	02	1022.0	17.8		1	1.5	31	8	24.5
WLGF	5	52.3 N	22.7 W	18	24	40	2 NM	10	0988.0	10.8	10.0	8	29.5	19	10	19.5
ULRS	6	31.1 N	24.1 W	00	34	M 35	5 NM	02	1023.7		20.0	4	19.5	36	8	26
WLGF	6	53.1 N	19.1 W	00	21	35	5 NM	01	0999.3	8.9	10.0	8	24.5	19	12	16.5
GBZU	6	37.8 N	12.7 W	06	17	M 24	10 NM	02	1021.8	15.0	14.5	3	5	31	15	29.5
ELNE	6	33.2 N	24.1 W	06	36	M 42	5 NM	81	1011.9	15.5	17.6	8	19.5	35	12	26
C7C	6	52.7 N	35.5 W	18	27	M 35	5 NM	27	1009.3	- 2.7	6.4	12	19.5	28	16	26
GWUM	6	57.4 N	16.1 W	18	26	M 52	2 NM	80	0992.8	3.2	9.5	10	29.5	22	11	24.5
FNLC	7	12.3 N	58.8 W	00	10	M 54	10 NM	02	1014.7	26.0	27.0					
KPDD	7	40.9 N	69.1 W	00	30	M 49	10 NM	02	1016.5	3.0						
UUGJ	7	59.2 N	04.8 W	06	25	M 27	10 NM	15	0998.2	7.0	9.0	3	6.5	25	9	32.5
FNPS	7	47.3 N	06.8 W	09	22	16	10 NM		1021.0	12.0	12.0	4	5	30	9	32.5
FNBA	7	50.2 N	51.2 W	12	34	M 50	.5 NM	74	0984.5	- 4.7		4	6.5	03	6	14.5
GZZS	7	36.4 N	15.2 W	12	07	19	10 NM		1016.9	18.1	17.0	3	5	16	10	26
KPTB	7	46.7 N	48.8 W	12	25	M 56	5 NM	02	0994.6	- 0.5	0.2	7	11.5			
GNBI	7	42.3 N	51.2 W	12	28	M 20	2 NM	59	1007.3	6.0	3.0	6	11.5	21	13	26
YTHU	7	35.9 N	67.1 W	12	33	M 48	10 NM	02	1023.2	14.2	21.0	4	8			
WVFN	7	46.9 N	48.7 W	15	25	53	5 NM		0994.7	- 0.9		8	1.5			
C7C	7	52.7 N	35.5 W	18	22	M 47	5 NM	07	0962.9	6.3	6.3	14	24.5			
FCEN	7	49.2 N	59.0 W	18	31	M 26	5 NM	01	1007.0	- 6.4		10	26			
FNZF	7	47.1 N	25.3 W	18	20	M 55	5 NM	18	1014.3	12.5	10.2	5	16.5	29	8	6.5
COVG	7	35.6 N	60.7 W	18	35	M 72	5 NM									
JPNA	7	53.6 N	36.1 W	18	24	M 58	2 NM	21		7.0	8.0	6	23	24	9	32.5
KFEM	7	43.2 N	51.4 W	18	28	40	5 NM	02	1011.0	3.4	5.5	10	29.5	27	14	26
VOBJ	7	47.1 N	46.6 W	18	27	M 60	.5 NM	07	0998.0							
JPNA	8	53.5 N	36.7 W	00	30	M 62	50 YD	04	0965.0	0.5	8.0	7	26			
CNPI	8	41.8 N	55.3 W	00	30	M 18	10 NM	01	1022.0	1.0	6.0	5	6.5	28	13	26
TFSV	8	52.4 N	32.9 W	00	22	M 52			0976.6	5.0						
GUZJ	8	43.6 N	68.1 W	06	29	M 50	10 NM	03	1016.0							
USKF	8	52.6 N	33.2 W	06	28	M 41	5 NM	23	0984.3	- 2.2	6.8	12	29.5			
C7L	8	56.7 N	19.2 W	09	22	M 59	2 NM	15	0964.1	4.7	9.7	9	21	23	10	21
FNGM	8	51.3 N	09.0 W	12	22	M 78	10 NM	18	1010.3	11.6	9.0	4	8	26	6	13
4YII	8	41.7 N	45.0 W	18	28	M 38	10 NM	03	1019.0	4.0		12	26	27	16	19.5
KFEM	8	41.9 N	59.6 W	18	26	40	10 NM	01	1016.0	8.3	14.5	8	24.5	28	10	16.5
RIGG	8	47.0 N	48.8 W	18	26	M 48	10 NM	02	1006.1	- 1.5		10	14.5			
ATJG	8	36.8 N	56.5 W	22	26	50	2 NM	25	0989.9	14.4						
C7L	9	56.7 N	19.9 W	00	25	M 42	5 NM	26		3.2	9.9	10	24.5	29	11	28
KFEM	9	41.2 N	61.5 W	00	27	50	10 NM	03	1017.9	6.8	12.8	8	24.5	27	10	16.5
UFJM	9	42.7 N	17.3 W	00	19	19	5 NM		1019.2	13.8	17.0	4	3	27	8	24.5
ATJG	9	37.0 N	54.7 W	04	27	54	1 NM	65	0987.4	13.0						
OETM	9	44.4 N	39.0 W	12	27	M 52	2 NM	82	1006.0	8.2	13.8	5	8	29	9	18
SPVM	9	49.2 N	04.4 W	12	31	M 50	10 NM	01	1023.4	13.9	8.0					
VCLW	9	41.6 N	61.8 W	12	24	M 05	10 NM	02	1024.1	4.5		8	3	24	8	32.5
RIGG	9	47.0 N	48.8 W	15	29	50	10 NM		1010.1	- 6.6		10	19.5			
DPFM	9	50.8 N	51.5 W	18	10	M 66	.25 NM	86	1007.1			7	14.5			
LLRL	9	45.2 N	33.1 W	18	27	M 55	2 NM			10.1						
FNZF	9	42.0 N	40.4 W	18	26	M 52	5 NM	82	1012.5	11.3	12.2	8	13	30	12	26
GOQF	9	43.2 N	39.5 W	18	26	M 55	2 NM	62	1010.1	8.5		4	19.5	27	8	19.5
GZZS	9	38.3 N	36.3 W	18	27	M 27		02	1020.9	15.5	16.5	2	8	31	9	24.5
JPNA	9	50.6 N	42.9 W	18	27	M 45	50 YD	73	0994.3	- 5.0	10.5	7	13	28	10	32.5
KPCV	9	31.1 N	70.4 W	18	18	12	10 NM	01	1021.3	22.3	18.9	2	1.5	14	10	52.5

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C Air	Temperature °C Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
ATLANTIC	FEB.															
VOBJ	9	47.3 N	47.5 W	18	28	M 55	.25 NM	70	1011.0							
WHIX	9	12.5 N	75.8 W	18	08	35	10 NM	02	1009.5	27.2	25.6	4	13	08	7	24.5
UUGJ	10	55.5 N	14.3 W	00	16	M 27	5 NM	03	0998.9	- 1.0	11.5	5	14.5	27	12	32.5
GTUS	10	42.2 N	28.5 W	06	27	M 36	5 NM	25	1010.0	12.4	13.2	5	13	27	9	29.5
XXU1	10	44.9 N	30.2 W	09	30	40	5 NM		1001.3	7.0	12.8	10	26	25	12	36
FNUB	10	40.7 N	34.7 W	12	29	M 20	1 NM	62	1024.5	10.3	15.7	3	5	32	8	32.5
FNWL	10	38.2 N	11.9 W	12	16	15	5 NM	02	1017.5	17.0	17.0			31	16	31
G7ZS	10	39.1 N	43.4 W	12	35	M 30	5 NM	21	1020.4	15.5	17.3	4	10	32	9	26
SLYD	10	21.0 N	82.9 W	18	09	M 12	10 NM	02	1017.9	28.0	27.0	2	1.5	15	0	57.5
DHES	10	52.0 N	20.2 W	18	27	M 44	10 NM	84	0993.5	3.2	10.8	8	29.5			
KPCV	10	25.7 N	68.5 W	18	16	14	10 NM	02	1021.7	27.8	22.2	4	3	13	10	50.5
ELGI	11	39.3 N	54.5 W	06	31	M 42			1018.5	12.0	15.5	7	19.5	27	9	24.5
VRJH	11	48.9 N	16.1 W	06	25	M 30		15	1009.0	8.7	13.3	5	8	28	9	24.5
KRTB	11	46.7 N	48.8 W	09	31	M 52	200 YD	75	0993.3	- 2.2		7	10			
RIGG	11	47.0 N	48.8 W	09	34	M 56	.25 NM	73	0989.1	- 1.8		7	11.5			
WVFN	11	46.9 N	48.7 W	09	32	M 50	2 NM	71	0991.0	2.2		7	11.5			
SLYD	11	23.1 N	65.9 W	12	13	M 10	10 NM	02	1018.6	25.0	26.0	2	1.5	33	0	57.5
CCCT	11	46.1 N	60.1 W	12	11	63										
DHES	11	53.9 N	26.3 W	12	27	M 13	10 NM	25	0995.5	3.5	10.5	2	3	30	8	29.5
EPES	11	45.8 N	44.9 W	12	30	M 54	2 NM	81	0991.5	2.5	5.6	15	26			
GTUS	11	40.2 N	34.4 W	12	24	M 34	5 NM	02	1012.5	17.3	16.3	4	10	25	10	26
C7ZS	11	40.4 N	52.9 W	12	30	42	5 NM		1018.9	8.9	15.8	6	16.5	23	9	26
URJP	11	44.5 N	46.7 W	12	31	54	5 NM		1003.9	3.2	7.0	14	23			
WMBO	11	37.6 N	50.9 W	12	35	40	5 NM	07	1022.4	16.1	17.8	6	16.5	29	10	26
XX29	11	42.3 N	34.2 W	12	24	38	5 NM		1004.1	16.3	13.7	10	24.5	25	10	19.5
ATSR	11	45.3 N	32.0 W	18	25	M 50	.25 NM	58	0989.0	12.0	15.0	6	32.5	26	0	32.5
DGDC	11	45.3 N	33.5 W	18	26	60	1 NM		0990.0	9.8	14.0	6	10	26	12	26
FNGM	11	43.0 N	32.6 W	18	26	45	5 NM	01	0998.6	17.6	14.5	4	10	28	9	24.5
PEWK	11	19.7 N	17.9 W	18	01	M 79	5 NM									
UYEY	11	42.7 N	15.6 W	18	22	M 16	10 NM	02	1023.1	14.0	16.0	2	3	27	12	26
FNGM	12	42.3 N	33.2 W	00	29	M 50	10 NM	01	1010.6	18.3	13.0	5	11.5	29	10	29.5
C7ZS	12	41.0 N	58.2 W	00	33	16	10 NM		1025.6	6.1	14.5	3	5	31	12	26
C7R	12	46.8 N	17.2 W	09	25	M 46	5 NM	25	0994.7	11.8	12.6	5	6.5	20	10	20.5
DGDC	12	46.3 N	26.6 W	12	27	M 50	2 NM	90	1002.8	9.5	15.0	7	13	27	12	26
FNZE	12	50.3 N	15.2 W	12	23	M 55	1 NM	18	0981.2	10.8	10.0	8	29.5			
UUGJ	12	50.5 N	14.4 W	12	23	M 47	5 NM	16	0986.1	12.5	10.5	12	32.5	29	13	29.5
UYSG	12	45.4 N	07.9 W	12	21	68	10 NM		1013.9	12.5	14.0	5	6.5	23	7	10
VPKB	12	45.3 N	22.8 W	12	28	M 47	5 NM	02	1003.4	8.5		5	10	28	10	32.5
DJJD	12	48.2 N	20.6 W	18	28	M 44	2 NM	07		8.0	12.8	5	19.5	27	12	29.5
FNOU	12	45.4 N	18.7 W	18	27	M 33	5 NM	16	1008.0	8.5	13.2	13	39			
GPOF	12	46.2 N	19.5 W	18	28	M 33	10 NM	15	1004.1	9.4	12.0	8	13	29	9	28
GUGG	12	43.2 N	21.9 W	18	28	M 27	10 NM	18	1014.6	9.2	13.5	4	13	30	17	26
OWGW	12	59.9 N	38.0 W	18	23	M 72	5 NM	16	0980.2	- 1.7	3.4	6	11.5			
UUGJ	13	49.4 N	15.0 W	00	24	M 45	1 NM	21	0994.6	9.0	10.5	12	34.5	29	15	29.5
RIGG	13	47.0 N	48.8 W	06	31	49	2 NM		1009.1	- 2.5		6	8			
UYEY	13	47.9 N	06.8 W	06	23	M 23	10 NM	01	1011.5	11.0	15.0	7	10	24	10	26
UZEU	13	19.2 N	21.6 W	06	02	78			1022.6		24.0					
FNRS	13	49.3 N	10.7 W	09	26	30	10 NM		1008.5	9.1	9.5	3	6.5	25	12	32.5
FNIG	13	45.5 N	08.7 W	12	01	04		02	1016.0		12.0	4	8	25	13	32.5
GNEW	13	42.3 N	09.2 W	12	27	M 16	5 NM	02	1020.6	12.5	14.0	4	5	30	12	26
G7ML	13	49.3 N	10.0 W	12	26	M 37	10 NM	01	1007.1	9.0	12.0	6	13	26	12	26
OWGW	13	59.4 N	40.3 W	12	26	M 58	2 NM	86	0984.7	- 5.5	0.9	6	19.5			
UYSE	13	42.7 N	09.6 W	12	23	M 58	10 NM									
ELGI	13	37.6 N	70.4 W	17	36	M 70	200 YD	82	0995.5	19.0	21.0	4	6.5	XX	8	19.5
CGVZ	13	37.7 N	68.0 W	18	21	M 60	1 NM	07	0996.0							
GZKA	13	46.2 N	36.8 W	18	33	52		21	1003.1	5.8	13.5	6	19.5	33	8	13
KFEJ	13	42.7 N	37.6 W	18	29	M 40	10 NM	15	1013.5	8.9	15.0	12	26	27	1	19.5
WMBO	13	38.9 N	65.6 W	21	20	55	.5 NM	07	0984.3	18.6	20.0	10	26	XX	10	29.5
ERXX	14	40.9 N	35.7 W	00	29	38	5 NM		1019.2	10.4	15.2	10	29.5	25	10	23
ELGI	14	37.3 N	72.4 W	00	32	M 35	10 NM	21	1022.0	5.0	21.0	5	13	35	8	24.5
KCRD	14	40.3 N	53.3 W	00	10	M 70	5 NM	81								
VPKB	14	45.3 N	30.7 W	00	29	M 70	.5 NM	25	0999.0	7.1	12.0					
FNZE	14	48.2 N	27.3 W	06	33	M 64	200 YD		0985.0	7.0						
GPOF	14	46.8 N	28.5 W	06	30	M 80	1 NM	27	0995.7		13.0					
OYDX	14	59.4 N	36.9 W	06	26	M 72	5 NM	86	0985.5	- 2.8						
VCRJ	14	38.7 N	58.3 W	06	25	M 57	2 NM			16.5						
***	14	45.3 N	31.8 W	12	29	M 38	5 NM	03	1020.4	6.1	13.0			32	11	26
7JNC	14	42.3 N	27.0 W	12	31	45	10 NM		1014.0	12.0	14.0	8	16.5	31	14	29.5
ATVR	14	39.1 N	62.6 W	12	32	M 50	2 NM									
GZKA	14	41.1 N	28.4 W	12	31	M 39	10 NM	02	1017.8	8.5	13.5	7	10	31	10	32.5
JPHG	14	42.3 N	19.7 W	12	28	M 43			1005.0	13.5	14.0	12	18	29	14	26
KDGA	14	39.1 N	52.8 W	12	20	50	5 NM	15	0999.3	16.2	17.2	5	19.5	22	8	29.5
KFEY	14	47.0 N	14.1 W	12	17	50	5 NM	50	0995.0	10.0	12.2	5	19.5	18	6	24.5
RIGG	14	44.1 N	58.5 W	12	32	M 80	.5 NM	73	0982.7			10	32.5			
S6CC	14	34.6 N	64.2 W	12	32	M 54	10 NM	01	1020.5	14.0	19.0	7	13	32	8	14.5
UUGJ	14	45.0 N	12.2 W	12	01	M 46	5 NM	60	1002.1		12.0	6	14.5	27	10	23
VOBJ	14	47.7 N	52.8 W	12	09	M 70	200 YD	75								
SMQL	14	42.0 N	58.3 W	18	28	M 48	2 NM	83	1006.1							
ESNJ	14	46.5 N	42.0 W	18	16	M 35	1 NM	61	1000.4	6.3	5.8	8	26	12	7	13
GYKD	14	34.9 N	34.3 W	18	16	08	10 NM		1028.6	16.4	17.7	1	1.5	34	10	32.5

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C Air	Temperature °C Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
ATLANTIC	FEB.															
GZML	14	48.6 N	22.2 W	18	32	M 41	2 NM	19	0991.2		13.0	6	10	31	11	24.5
KCRD4	14	40.1 N	48.3 W	18	20	M 68	5 NM	02	1000.0	15.6	15.0	7	19.5	18	6	19.5
KFGJ	14	44.3 N	42.5 W	18	18	50	.5 NM	81	0997.1	13.0	15.5	6	16.5	18	8	16.5
KRTB	14	46.7 N	48.8 W	18	21	M 67	.5 NM	81	0978.3	2.5	0.5	9	14.5	13	9	10
OWGW	14	59.6 N	43.6 W	18	29	M 58	10 NM	86	1002.0	- 7.7		5	13			
PHSM	14	47.6 N	08.9 W	18	14	M 66	10 NM		1007.2		11.1	6	10	17	8	13
PVPR	14	39.3 N	53.0 W	18	28	M 53	5 NM	02	1006.0	13.0	16.0	4	10	27	8	23
SDZA	14	43.2 N	42.6 W	18	18	M 40	1 NM	60	1001.0	14.0	10.0	15	26	18	16	26
VFCQ	14	41.8 N	34.3 W	18	29	M 14	10 NM	02	1025.5	10.6	15.0	2	1.5	34	13	26
FIGG	15	44.1 N	58.5 W	00	32	M 55	.5 NM	73	1011.9	- 6.0		9	16.5			
GXAY	15	42.2 N	08.9 W	00	13	M 60	5 NM		1000.0	10.0	12.8	5	6.5			
KFEY	15	45.3 N	18.8 W	00	32	50	5 NM	50	0990.5	10.0	12.2	5	19.5	32	6	32.5
KPTB	15	46.7 N	48.8 W	00	24	M 72	.25 NM	66	0974.4	- 2.2		12	32.5			
RIGG	15	47.0 N	48.8 W	00	26	M 73	1 NM	68	0970.9	- 2.6	0.6	12	32.5			
UUGJ	15	44.0 N	12.5 W	00	23	16	10 NM		0997.5	12.0	12.0	6	6.5	29	12	26
WVFN	15	46.9 N	48.7 W	00	23	M 72	.25 NM	42	0976.2		1.2	12	24.5			
GZKA	15	43.8 N	22.7 W	06	32	M 30	10 NM	03	1014.2	9.3	12.9	6	10	33	9	29.5
USXE	15	53.3 N	35.2 W	06	13	M 50	2 NM	75	0994.8	0.5	5.6	8	13	20	7	13
FNBA	15	52.1 N	50.0 W	09	34	M 60	200 YD	75	0971.7	- 1.6						
DHMS	15	35.7 N	51.0 W	12	30	M 37	10 NM	15	1023.2	16.0	17.1	6	10	29	9	24.5
DJJD	15	38.4 N	26.3 W	12	26	22	10 NM		1019.5	14.0	14.6	4	5	33	14	24.5
FNZE	15	44.5 N	37.4 W	12	26	M 50	2 NM			8.6						
GYKD	15	37.3 N	30.0 W	12	23	15	10 NM		1020.5	16.8	16.2	2	5	02	10	29.5
JPHG	15	42.9 N	14.0 W	12	01	25	5 NM		1002.5	12.0	14.5	10	16.5	28	16	28
KDGA	15	38.4 N	56.0 W	12	29	45	5 NM	16	1022.7	6.7	19.5	5	19.5	29	7	32.5
OXJF	15	39.5 N	54.0 W	12	31	40	2 NM	84	1020.2	8.0		14	26			
UIWR	15	38.9 N	16.1 W	12	31	14	10 NM	03	1008.9	13.6	16.0	7	19.5	30	18	28
VORD	15	45.3 N	58.6 W	12	12	54	5 NM		1021.0							
EIDC	15	40.1 N	43.5 W	18	31	M 44	2 NM	82	1009.5	5.5	15.5	6	16.5	30	10	28
GOOF	15	46.6 N	36.3 W	18	26	M 55	5 NM	16	0992.8	6.5	12.8	6	23	26	8	23
GUBR	15	39.5 N	10.2 W	18	08	M 09	10 NM	25	1001.2	12.0	14.6	2	1.5	31	10	26
GZML	15	48.2 N	27.6 W	18	25	M 34	10 NM	18		11.0	13.0	4	8	32	9	26
WHGA	15	50.1 N	47.2 W	18	30	60	.5 NM	73	0980.0		1.1	8	13	30	12	41
UPUJ	16	50.1 N	05.0 W	00	07	25	10 NM				8.6	0	39			
WHGA	16	49.7 N	48.9 W	00	30	40	1 NM	07	0999.8	- 2.8	1.2	7	11.5	30	12	32.5
ETOC	16	40.0 N	45.5 W	12	28	M 76	10 NM	01	1020.1	7.0	12.0	4	8	29	9	16.5
FLFC	16	48.9 N	25.6 W	12	18	M 32	5 NM	15	0991.0	12.0	14.0	4	10	27	13	26
FNNW	16	48.9 N	23.6 W	12	16	M 45	2 NM	18	0990.8	12.5	11.0	6	8	27	13	28
GBRM	16	36.1 N	33.6 W	12	31	M 35	10 NM	14	1018.4	13.5	19.0	3	5	31	16	39
GXOB	16	41.0 N	49.1 W	12	22	09	10 NM		1018.0	6.7	0.6	3	5	32	9	26
KFEY	16	43.7 N	32.5 W	12	29	40	10 NM	01	1003.5	12.0	13.7	5	8	29	6	29.5
VLAE	16	49.8 N	35.8 W	12	26	M 37	2 NM	91	0986.8	5.3	10.0	4	11.5	26	10	28
6ZFQ	16	35.5 N	71.4 W	18	22	M 60	5 NM	02	1016.0	20.0	19.0	5	10	27	6	11.5
DJJD	16	37.3 N	32.7 W	18	30	M 24	10 NM	25	1016.0	11.8	15.5	4	8	30	13	26
G7ML	16	47.5 N	34.0 W	18	26	M 34	10 NM	18	0940.2	4.0	14.0	5	13	26	11	42.5
JLFC	16	48.7 N	26.6 W	18	26	M 28	10 NM	61	0998.0	9.5	14.0	4	8	25	13	26
KCRD	16	40.0 N	30.0 W	18	31	M 58	10 NM	02	1001.2	9.4	14.4	8	8	31	9	13
UZEU	16	23.0 N	19.5 W	18	02	58			1022.6		21.0					
VRCQ	16	45.6 N	20.5 W	18	16	M 55	2 NM	63	0998.0	12.2	13.0	8	10	16	7	28
WLAM	16	30.6 N	42.8 W	18	35	M 12	10 NM	02	1023.7	21.7	18.9	3	3	32	8	24.5
WMIG	17	35.4 N	30.6 W	00	30	M 15	10 NM	01	1020.3	11.7	16.7	3	3	31	8	24.5
WVFN	17	46.9 N	48.7 W	03	26	M 48	5 NM	02	0988.2	0.0		8	13	36	11	8
CGGN	17	46.9 N	45.5 W	06	24	M 60	2 NM	71	0979.8	3.5		7	19.5			
KFEY	17	41.5 N	40.0 W	12	23	55	2 NM	58	0995.0	12.0	14.5	6	24.5	23	8	23
VRCQ	17	46.7 N	15.1 W	12	29	M 30	10 NM	15	1004.9	11.0	13.0	3	5	29	15	28
7JNO	17	35.6 N	40.3 W	18	23	M 78	10 NM	02	1011.2	17.5	17.5	7	11.5	32	12	14.5
GZML	17	46.7 N	40.4 W	18	26	M 50	10 NM	27	0984.0	2.9	14.0	4	8	26	10	32.5
KFCV	17	42.2 N	36.6 W	18	26	42	5 NM	25	0994.2	12.7	14.5	5	11.5	25	7	28
FNBA	18	51.8 N	51.9 W	00	33	M 50	2 NM	26	1000.0	- 7.4		1	1.5	35	8	14.5
CGGN	18	47.3 N	46.2 W	12	31	50	1 NM		0997.4	- 1.0						
FNPH	18	38.7 N	32.8 W	12	21	M 45	5 NM	25	1002.6	16.5	15.4	6	26			
GMLE	18	57.3 N	00.0 W	12	14	M 45	5 NM	10	1028.3	4.0	6.0	5	8	13	9	24.5
GZVU	18	36.5 N	34.4 W	12	22	34	10 NM	02		17.2	17.5	5	6.5	25	11	26
JLFC	18	46.7 N	32.1 W	12	25	M 36	5 NM	27	0991.5	6.5	14.0	4	8	27	10	26
KFEY	18	40.4 N	45.9 W	12	29	50	10 NM	02	1007.0	10.0	15.6	10	13	29	7	16.5
SHJA	18	46.8 N	42.1 W	12	32	M 72	< 50 YD	26	0985.0	4.0	16.0	9	16.5	28	10	19.5
WMIG	18	35.0 N	38.7 W	12	22	M 38	5 NM	02	1009.1	17.8	18.9	7	19.5	22	9	24.5
EIDG	18	47.1 N	30.1 W	18	25	M 30	5 NM	03	0985.6	8.0	11.0	3	8	25	9	29.5
JMUC	18	44.7 N	23.5 W	18	19	M 53	1 NM	62	0998.5	15.0	14.0	9	14.5	19	12	23
PCVH	18	44.7 N	41.7 W	18	30	M 47	2 NM	70	0994.0	4.0	14.2	6	26			
GONO	19	41.2 N	18.4 W	06	19	M 44	10 NM	02	1013.8	14.2		4	13	27	10	29.5
DGLU	19	41.6 N	21.8 W	12	23	M 18	1 NM	64	1010.0	12.5	14.0	4	5	25	8	26
GZML	19	47.6 N	46.9 W	12	28	M 28	10 NM		1005.1	- 6.4	3.0	5	11.5	36	10	29.5
SHJA	19	46.6 N	47.2 W	12	31	M 58	10 NM		1007.0	- 4.0	2.0	6	6.5	30	10	19.5
ETDG	19	45.9 N	33.4 W	18	27	M 44	5 NM	82	0996.9	6.0	11.0	2	8	30	11	24.5
GONS	19	41.3 N	39.7 W	18	28	M 35	10 NM	83	1005.5	6.5	12.5	6	14.5	32	9	24.5
JLFC	19	45.4 N	35.9 W	18	26	M 36	10 NM	01	1004.0	6.0	15.0	5	10	09	9	26
KFEZ	19	39.7 N	43.5 W	18	29	30	10 NM	02	1010.8	8.9	15.6	6	13	33	14	32.5
SPVR	19	15.5 N	40.0 W	18	08	M 48	> 25 NM	02	1008.0	26.2						
ZCKE	19	47.7 N	39.9 W	18	28	M 44	5 NM	15	0996.2	1.6	8.0	8	16.5	34	10	29.5

Nationality	Date	Position of Ship		Time GMT	Wind		Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C.		Sea Waves†		Swell Waves		
		Lat. deg.	Long. deg.		Dir. 10°	Speed kt.				Air	Sea	Period sec.	Height ft.	Dir. 10°	Period sec.*	Height ft.
ATLANTIC	FEB.															
WSVB	20	36.0 N	25.5 W	06	23	M 35			1015.9	15.0	15.0	6	16.5	23	7	24.5
JRKC	20	48.4 N	37.1 W	12	27	M 26	5 NM	26	1003.5	6.5	12.0	3	13	32	6	29.5
EIJH	21	37.6 N	66.3 W	00	31	M 50	2 NM	18	0987.0	12.0		4	6.5	31	9	13
UNWO	21	46.6 N	29.7 W	00	31	M 52	5 NM		1002.6	8.0	11.5					
CG2388	21	44.2 N	66.3 W	06	03	M 48	1 NM	64	0997.0							
GLGA	21	35.8 N	65.7 W	06	31	M 52	5 NM		0995.2	15.1	22.0	6	24.5	29	10	29.5
WMIG	21	36.1 N	60.5 W	12	26	M 40	10 NM	01	0992.5	15.6	17.8	8	29.5	26	8	32.5
DJJD	21	30.5 N	59.6 W	18	28	M 18	10 NM	03	1007.5	19.0	19.7	4	8	31	13	24.5
WVFN	22	46.8 N	49.8 W	00	12	M 49	1 NM	63	1004.4	3.0	0.2	7	10			
EWVO	22	44.2 N	63.2 W	12	01	M 78		50	0997.4	1.0						
WTGD	22	28.4 N	74.2 W	18	32	40	10 NM	14	1005.0	18.5	22.5	6	24.5	32	7	32.5
WTGD	23	30.2 N	75.5 W	06	33	35	10 NM	27	1014.0	14.0	21.1	7	24.5	33	8	29.5
DJJD	23	28.1 N	68.1 W	18	32	M 21	10 NM	25	1010.3	15.0	21.4	4	6.5	31	13	26
WEZU	24	36.0 N	29.5 W	12	29	M 12	10 NM	01	1027.0	17.2	16.1	2	5	29	0	37.5
ABOY	24	41.5 N	54.5 W	18	27	54	5 NM	01	0997.0	7.0						
RIGG	24	44.1 N	58.5 W	18	29	M 60	2 NM	85	0995.0	- 3.6		8	18			
VGLN	24	46.1 N	59.5 W	18	27	M 48	2 NM	15	0993.0							
RIGG	25	44.1 N	58.5 W	00	30	M 50	10 NM	02	1000.7	- 1.9		8	18			
WVFN	25	47.1 N	55.0 W	03	27	M 62	1 NM	73	0984.9	- 4.5		5	6.5			
CYPL	25	47.3 N	59.9 W	12	29	M 48	2 NM	76	0999.0							
USJM	25	46.3 N	46.5 W	12	25	35	10 NM		0996.9	- 0.4	3.0	16	24.5			
VC8137	25	44.5 N	53.3 W	12	26	M 50	5 NM	14	1001.0							
C7C	25	52.7 N	35.5 W	18	23	M 39	5 NM	27	0984.7	4.7	5.7	11	18	23	16	24.5
CGGN	25	49.6 N	54.5 W	18	24	60	5 NM		0982.6	-10.5						
WNDJ	25	41.6 N	46.5 W	18	28	18	10 NM	01	1005.8	10.6	15.6	7	1.5	28	7	24.5
C7L	26	56.7 N	20.2 W	00	25	M 50	2 NM	07	0976.5	7.0	9.7	6	13	23	10	13
VC8137	26	44.0 N	56.2 W	06	26	M 50		88	0996.0							
ABOY	26	41.2 N	57.9 W	12	31	M 52	.5 NM	90	1008.0	1.5						
CGDJ	26	43.7 N	57.9 W	12	29	M 55	2 NM	86	0997.2	- 7.0	2.2	7	24.5	33	5	10
GVOC	26	41.3 N	28.7 W	12	19	50	5 NM		1014.1	16.4	14.8	4	16.5	22	10	32.5
GXHB	26	41.6 N	58.5 W	12	29	M 43	2 NM	72	1006.3	0.5	15.0	8	24.5	28	8	24.5
GNMF	26	38.7 N	49.7 W	12	27	M 50	10 NM	16	1004.4	12.0		6	13	27	10	19.5
VYGJ	26	48.4 N	67.6 W	12	31	M 55	1 NM	75	0987.0							
RIGG	26	44.1 N	58.5 W	15	29	M 60	.5 NM			-10.6						
APCZ	26	42.9 N	62.5 W	18	28	M 48	10 NM	02	1015.7	- 7.0	2.2	8	16.5			
C7C	26	52.7 N	35.5 W	18	19	M 39	10 NM	71	0972.9	5.2	5.9	10	16.5	20	17	24.5
CGGDC	26	53.4 N	38.5 W	18	19	M 63	.25 NM		0952.5	3.0						
CGBR	26	47.5 N	60.5 W	18	30	M 53	.5 NM	71	0993.8	-10.2						
CYPL	26	44.7 N	62.2 W	18	27	M 52	10 NM	07	1005.0							
DJJA	26	40.8 N	45.8 W	18	26	M 49	5 NM			6.8						
DJJE	26	40.9 N	60.8 W	18	28	M 70	2 NM	86	1014.9	- 0.6	1.2	4	16.5	27	11	13
ELAD4	26	40.1 N	59.1 W	18	29	M 50	1 NM	76	1015.0	4.0	12.5	7	28	27	7	24.5
ERET	26	48.9 N	28.2 W	18	22	M 23	5 NM	25	0997.3	11.9	11.8	8	10	25	19	28
ESNJ	26	41.2 N	52.2 W	18	27	M 39	5 NM	02	1002.9	2.9	12.0	10	26	29	8	19.5
OWIM	26	42.7 N	41.9 W	18	29	40	10 NM	01	1000.0	7.0	16.0	8	26			
TF7J	26	42.9 N	11.4 W	18	30	M 53	1 NM	10	1022.5	13.2						
UJBX	26	40.5 N	53.6 W	18	28	M 45	2 NM	88	1004.1	3.1	15.0	18	26			
VC2457	26	44.0 N	64.7 W	18	32	50	10 NM		1013.0							
APCZ	27	42.4 N	60.9 W	00	26	M 51	10 NM	02	1018.2	- 5.2	2.2	8	16.5			
DJJE	27	40.8 N	61.0 W	00	30	M 52	2 NM	86	1019.4	- 0.5	2.1	14	32.5			
GONQ	27	28.6 N	67.5 W	00	06	M 30	10 NM	02	1027.1	19.4	19.8	6	16.5	35	8	24.5
KPGQ	27	36.6 N	50.7 W	00	30	46	5 NM	02	1019.6	12.2	17.2	7	13	30	7	16.5
UJBX	27	40.6 N	54.3 W	00	28	M 48	2 NM	88	1009.3	2.5	14.0	18	32.5			
CYPL	27	44.1 N	63.7 W	06	30	M 52	10 NM	07	1020.0							
FNLO	27	39.0 N	40.9 W	06	27	M 45	10 NM	21	1012.0	17.5	16.1	10	24.5			
OWIM	27	41.9 N	45.0 W	06	27	50	5 NM	01	1006.0	7.5		8	32.5			
EPET	27	50.4 N	31.3 W	09	23	M 45	5 NM	27	0987.9	5.7	10.7	15	24.5	24	24	29.5
EWVO	27	41.5 N	55.1 W	12	29	M 45	1 NM	22	1014.2	0.0	9.8	10	26	29	14	26
GOOP	27	46.7 N	34.8 W	12	26	M 41	10 NM	18	0996.0	9.0	13.0	4	19.5	26	12	32.5
ONTI	27	45.0 N	55.9 W	12	28	M 46	.5 NM	74	1010.1	- 8.0		4	6.5	28	10	26
TFXO	27	48.8 N	43.7 W	12	27	M 52	5 NM		0989.2	- 2.3						
WNDJ	27	41.0 N	55.4 W	12	28	56	5 NM	85	1019.5	2.7	8.3	4	10	29	6	32.5
SPFC	27	37.2 N	55.7 W	15	28	M 78	5 NM	02	1026.5	19.0	19.0	6	26	29	7	26
C7C	27	52.7 N	35.5 W	15	22	M 52	200 YD	86	0973.3	0.0	5.8	12	19.5	24	19	31
CGBN	27	46.3 N	60.1 W	15	28	M 50	5 NM	02	1013.9	-12.5		1	1.5			
7JNU	27	34.6 N	53.0 W	18	30	23	10 NM		1029.0	13.0	18.0	6	11.5	31	11	29.5
ESNJ	27	41.2 N	52.6 W	18	31	M 33	5 NM	76	1019.2	0.8	12.0	8	19.5	30	10	26
GOZT	27	45.7 N	33.2 W	18	26	M 60	1 NM	18	0998.7	8.0	14.0	2	18			
GYMR	27	40.0 N	47.7 W	18	30	M 44		89	1018.6	5.6	14.9	7	23	28	10	26
ONAY	27	45.5 N	36.3 W	18	24	M 52	2 NM	64	0997.0	4.5	11.5	6	14.5	25	12	39
ONMF	27	38.2 N	51.9 W	18	29	M 48	10 NM	82	1022.5	10.2	16.0	7	19.5	28	12	24.5
RIGG	27	44.1 N	58.5 W	18	28	65	10 NM		1018.1	- 6.6		10	18			
VPFZ	27	44.8 N	36.7 W	18	25	M 60	1 NM	18	0999.3	6.8	13.0	8	24.5	26	8	26
WVFN	27	47.1 N	55.0 W	18	28	48	10 NM		1004.0	- 7.4		6	3			
ABCY	28	40.1 N	60.4 W	00	27	M 37			1026.1	8.7	14.0	6	26	28	9	32.5
GPJB	28	28.4 N	49.2 W	00	03	M 17	10 NM	15	1028.3	19.3	21.1	3	6.5	35	12	26
KCEA	28	19.3 N	62.0 W	00	08	M 48	10 NM	02	1019.6	24.0						
KIGG	28	44.1 N	58.5 W	00	28	60	10 NM		1020.5	- 4.6		10	14.5			
UNRW	28	42.7 N	50.2 W	00	28	37	10 NM	02	1020.9	- 2.2	3.0	8	32.5			
VPFZ	28	44.7 N	37.2 W	00	25	M 55	2 NM	27	1001.4	4.1	13.0	8	28	25	8	28

Nationality	Date	Position of Ship		Time GMT	Wind		Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C.		Sea Waves†		Swell Waves		
		Lat. deg.	Long. deg.		Dir. 10°	Speed kt.				Air	Sea	Period sec.	Height ft.	Dir. 10°	Period sec.*	Height ft.
ATLANTIC	FEB.															
CWIK	28	39.5 N	50.2 W	06	29	40	10 NM	98	1021.3	10.5		8	29.5			
UHAJ	28	45.0 N	46.5 W	06	24	48	5 NM	02	1009.8	- 4.0	4.0	6	16.5			
GONR	28	42.4 N	46.3 W	12	27	M 41	10 NM	02	1020.4	3.0	10.0	6	10	28	9	29.5
GVOC	28	33.7 N	41.2 W	12	29	15	10 NM		1031.3	16.4	17.7	2	5	29	12	29.5
KFGJ	28	42.9 N	41.0 W	12	27	50	5 NM	27	1013.9	5.6	15.6	12	19.5	27	13	23
PDCU	28	40.6 N	33.6 W	12	27	M 44	10 NM	01	1021.5	11.8	15.0	9	26			
WLGF	28	35.0 N	36.4 W	12	28	10	10 NM	02	1030.0	20.6	17.2	3	3	31	12	26
DEBS	28	41.3 N	30.8 W	15	27	48	5 NM		1021.8	12.5	14.2	6	10	26	15	26
KFDZ	28	38.3 N	47.3 W	18	32	M 50	> 25 NM	25	1022.0	12.8	16.1	4	13	29	6	19.5
LGNP	28	44.3 N	25.3 W	18	24	M 65	1 NM		1012.7	8.8						
OWEW	28	56.7 N	40.0 W	18	34	M 58	10 NM	83	0976.0	5.0	4.2	10	16.5			
OYBG	28	40.2 N	30.2 W	18	30	M 43	> 25 NM	02	1025.0	16.0	15.9	8	21	30	14	34.5
	MAR.															
GOOR	1	45.9 N	40.1 W	00	27	M 40	2 NM	86	1012.1	3.5	1.3	3	16.5	28	8	32.5
GVOC	1	31.5 N	44.8 W	00	11	15	10 NM	03	1029.9	17.3	19.0	2	5	31	12	29.5
VPFZ	1	43.5 N	40.4 W	00	26	M 46	5 NM	02	1017.4	5.8	13.0	8	24.5	26	9	29.5
CYCH	1	42.1 N	61.5 W	06	28	M 52	10 NM	00	1021.0	-16.0						
GBJR	1	34.2 N	38.3 W	06	15	M 09	10 NM	01	1028.2	16.2	17.4	2	5	33	15	26
KHLY	1	49.6 N	36.2 W	06	25	60	5 NM	18	0999.0	2.7	8.3	7	11.5	XX	9	19.5
C7C	1	52.7 N	35.5 W	09	27	31	10 NM		0995.0	2.6	6.0	9	14.5	25	16	31
DEBS	1	42.7 N	26.0 W	09	26	M 72	10 NM	25	1025.3	13.0	13.0	5	8	27	16	26
DEJL	1	40.4 N	18.2 W	12	26	18	10 NM		1030.6	15.5	15.0	4	6.5	29	13	24.5
JLRY	1	50.2 N	10.8 W	12	25	M 49	5 NM	15	1002.5	10.0						
OWGW	1	56.2 N	33.3 W	12	26	M 72	10 NM	02	0985.8	6.5	7.0	10	19.5			
UZLJ	1	46.8 N	08.6 W	12	25	M 33	10 NM	02	1016.6	11.8	13.0	5	10	29	11	32.5
WSNH	1	46.2 N	21.7 W	12	29	M 49	10 NM	18	1015.8	9.0	12.0	7	19.5	31	10	24.5
SPIC	1	47.8 N	16.1 W	15	28	M 50	2 NM	21	1009.5	8.5	13.0	5	13	26	10	16.5
7JNU	1	39.0 N	41.8 W	18	21	M 38	2 NM	50	1008.7	17.0	17.0	6	11.5	21	11	26
GXUT	1	43.9 N	23.0 W	18	24	M 35	5 NM	02	1026.0		13.2	5	8	25	12	24.5
GYAX	1	40.3 N	09.8 W	18	33	12	10 NM		1033.5	15.4	14.8	2	3	30	15	26
KFEZ	1	58.1 N	11.2 W	18	25	30	10 NM	81	0984.1	6.1	10.0	3	6.5	24	10	24.5
OYBG	1	43.5 N	21.5 W	18	28	M 40	10 NM	02	1027.8	17.2	15.9	8	16.5	28	14	29.5
PHVW	1	45.5 N	08.0 W	18	25	M 50	2 NM	25	1016.5	11.7						
SLPN	1	44.9 N	28.5 W	18	22	M 72	10 NM	60	1019.5	12.2						
TFZJ	1	52.1 N	15.3 W	18	02	M 63	2 NM	15	1000.4	9.9						
GYAX	2	38.9 N	09.9 W	00	32	05	10 NM		1035.7	14.1	14.8	2	1.5	33	15	26
LGAC	2	42.0 N	54.7 W	00	10	42		01	1028.0		8.0	7	32.5			
ESGK	2	45.9 N	46.0 W	06	29	43	5 NM		1007.7	6.0	12.5	22	29.5			
SLPN	2	44.9 N	36.1 W	06	23	M 72		60	1005.0	9.5						
UZGH	2	48.9 N	29.4 W	06	28	M 50	5 NM	61	0986.7	8.6	11.3					
KFEZ	2	57.5 N	17.4 W	11	25	38	10 NM	18	0987.5	5.5	9.5	5	11.5	25	11	28
C7R	2	47.0 N	17.2 W	12	21	42	5 NM		1011.7	13.3	12.2	8	13	27	12	26
GOOF	2	48.7 N	24.2 W	12	25	M 54	10 NM	15	1002.0	9.0	13.0	4	10	26	8	16.5
GZMO	2	44.0 N	17.0 W	12	21	39	10 NM		1022.5	14.7	11.4	4	18	21	8	29.5
USJM	2	46.7 N	24.0 W	12	25	35	10 NM		1001.5	11.8	12.0	12	13	25	21	24.5
TFZJ	2	54.7 N	16.3 W	15	21	M 68	50 YD	65		8.4						
GXAY	2	50.1 N	06.0 W	18	22	M 40	2 NM	61	1008.0	11.4	9.8	9	19.5	25	12	29.5
GXAY	3	49.6 N	06.1 W	00	23	M 42	2 NM	07	1004.7	11.7	9.3	9	19.5	25	12	31
PDCU	3	35.5 N	49.2 W	00	16	M 53	10 NM	02	1021.5	14.0	17.0					
WSNH	3	49.1 N	07.1 W	00	22	M 48	5 NM		1006.8	12.5	11.0	8	18	28	9	16.5
TFXP	3	57.8 N	01.9 W	03	18	M 58	10 NM									
RIGG	3	44.1 N	58.5 W	06	27	48	10 NM		0995.3	- 0.7		11	13			
TSLL	3	46.6 N	06.7 W	06	23	32	5 NM	02	1013.4	12.5	10.0	5	8	29	10	26
CGCV	3	48.3 N	64.5 W	12	10	72		02	1001.2							
DEBS	3	47.1 N	11.5 W	12	27	24	10 NM		1016.9	11.7	11.6	5	10	29	11	29.5
FNBA	3	47.5 N	59.4 W	12	31	M 48	1 NM	86	0994.5	- 8.1		5	6.5			
GJVE	3	56.8 N	00.5 W	12	23	M 60	5 NM	07	0971.3	6.5		6	26	23	8	23
GLPH	3	56.1 N	02.4 W	12	24	M 52	5 NM	07	0975.9	7.5	5.0					
GWME	3	37.7 N	53.2 W	12	30	M 52	5 NM	02	1009.8	14.8	16.0	4	6.5	30	9	13
GYZK	3	51.8 N	05.7 W	12	25	M 48	5 NM	03	0999.6	8.5	8.5	3	6.5	25	2	19.5
KFEM	3	48.8 N	14.6 W	12	27	41	5 NM	82	1009.8	8.9	12.2	27	23	27	10	29.5
KFEZ	3	55.7 N	28.4 W	12	27	45	10 NM	23	1005.5	4.4	8.3	6	13	27	11	32.5
P3WP	3	49.1 N	08.6 W	12	27	M 48	2 NM	16	1003.0	15.0						
SJZN	3	13.2 N	74.8 W	12	09	M 68	10 NM	02	1013.5	26.0	26.2	8	6.5			
FNIR	3	47.6 N	04.0 W	15	26	M 23	5 NM	60	1011.0	10.2	10.1	10	13	26	16	26
DAKE	3	54.1 N	22.7 W	18	29	M 52	10 NM	26	1008.2	5.0	10.5	9	18	26	9	19.5
UIJT	3	48.7 N	09.9 W	18	24	M 35	5 NM	03	1009.8		11.0	10	13	27	11	26
GXAY	4	46.8 N	07.6 W	00	28	M 36	10 NM	15	1019.1	9.7	11.2	8	14.5	27	13	31
KFEM	4	48.6 N	17.7 W	00	28	40	5 NM	02	1022.7	6.7	12.8	6	23	29	10	29.5
KGER	4	28.3 N	89.1 W	00	16	10	10 NM	02	1011.9	20.0		3	1.5	36	11	31
GTES	4	45.5 N	16.3 W	06	32	18	10 NM	00	1031.1	11.0	15.0	4	19.5	32	8	46
ZCKE	4	50.1 N	10.3 W	06	32	M 37	5 NM		1017.0	8.5	12.0	8	19.5	30	9	29.5
GPJB	4	48.7 N	07.0 W	12	31	M 33	10 NM	81	1021.8	9.0	11.0	5	11.5	31	12	26
7JNO	4	33.5 N	58.0 W	18	01	M 75	10 NM	02	1022.0	17.5	19.0	4	6.5	31	8	10
KFEZ	4	52.7 N	39.0 W	18	25	40	5 NM	26	0993.1	3.4	7.3	4	10	24	12	29.5
SEBA	4	46.7 N	45.5 W	18	27	M 27	2 NM	72	1010.3	- 1.8		8	11.5	27	11	24.5
GUHL	5	49.0 N	04.9 W	06	24	M 10	10 NM	03	1003.5	8.5	10.0	2	1.5	28	10	24.5
KFEZ	5	50.8 N	43.7 W	12	28	45	.5 NM	88	1007.0	- 1.1	12.2	5	8	28	14	29.5
SEBA	5	47.1 N	40.9 W	12	27	M 58	5 NM	26	1026.3	1.7		12	14.5	30	13	13
C7C	5	52.7 N	35.5 W	15	27	M 41	.5 NM	86	1009.8	0.6	5.8	13	21	23	16	26
GYUC	5	47.8 N	45.0 W	18	27	M 20	10 NM	01	1030.1	- 0.8	2.7	7	8	31	10	24.5
KFEM	5	48.7 N	35.0 W	18	27	30	5 NM	26	1022.0	4.4	10.6	10	19.5	27	14	26
CGXD	6	46.6 N	56.3 W	00	18	M 50	2 NM	64								

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves+ Period sec.	Sea Waves+ Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
ATLANTIC	MAR.															
KFEM	6	48.4 N	36.9 W	00	30	36	5 NM	26	1029.5	4.5	11.2	8	19.5	30	12	26
EVWF	6	15.7 N	58.2 W	12	02	M 78	10 NM	03	1015.0							
C7C	6	52.7 N	35.5 W	15	18	M 47	5 NM	61	1010.9	6.0	5.8	14	24.5			
ZCKU	7	48.7 N	12.6 W	12	23	M 14	5 NM		1026.0	9.8	11.5	3	6.5	31	6	32.5
FNZC	8	08.5 N	52.1 W	00	09	M 50	5 NM	02	1021.4	24.0						
GOTQ	8	36.5 N	67.5 W	00	17	35	5 NM	02	1015.4	21.0	23.3	8	10	17	9	41
NCST	8	19.9 N	60.9 W	12	09	24	5 NM	15	1021.5	24.3	25.6	5	10	11	7	29.5
RIGG	8	44.1 N	58.5 W	15	20	M 50	50 YD	45	1009.1	7.3		9	11.5			
SEBA	8	48.6 N	22.6 W	18	25	M 27	2 NM	62	1016.5	9.8		8	10	32	18	26
FAMO	10	14.7 N	61.2 W	06	02	50	10 NM		1015.5		26.0	5	8			
WLCI	10	27.4 N	47.4 W	12	09	M 20	10 NM	02	1027.4		22.7	3	5	09	8	34.5
TFLE	10	54.5 N	40.8 W	15	27	M 52	2 NM	26	1011.0	- 3.2						
C7C	10	52.7 N	35.5 W	18	27	M 39	5 NM	26	1018.6	1.0	5.7	12	19.5	27	18	29.5
TFHB	10	57.0 N	33.1 W	18	28	M 68	5 NM	86	0994.9	- 2.8	7.0					
UEVY	10	50.3 N	00.1 W	18	24	M 48	10 NM	03	0994.7	9.2	9.0	10	13			
UNVF	10	14.8 N	17.6 W	18	02	16	5 NM		1012.5	18.0	20.0	5	8	36	77	28
GRUJ	11	46.9 N	05.4 W	06	28	M 18	10 NM	02	1019.5	10.0	11.0	4	6.5	22	11	32.5
C7C	11	52.7 N	35.5 W	09	29	M 37	5 NM	26	1012.9	0.2	5.8	11	18	28	16	26
HBNS	11	36.0 N	17.1 W	12	01	55										
JCJE	11	13.6 N	40.3 W	18	08	M 12	10 NM	01	1012.7	26.2	24.0	3	3	06	7	29.5
OXVL	11	59.4 N	33.1 W	18	27	52			0982.8	- 2.1	4.4	9	23			
TFHB	11	56.3 N	33.0 W	18	28	M 52			0998.8	- 2.0	7.6					
KFCX	12	48.5 N	17.0 W	00	28	40	5 NM	80	1011.5	7.2	11.7	3	13	28	6	26
D5BM	12	47.9 N	11.8 W	06	31	M 42	10 NM	01	1013.5	8.0	13.0	6	29.5	30	7	29.5
GQHC	12	41.2 N	20.6 W	C6	32	M 16	10 NM	15	1025.9	12.3	14.8	3	3	24	8	26
GRVH	12	56.3 N	00.4 W	06	16	M 55	2 NM	63	0978.5	5.0		6	6.5	17	7	23
OETK	12	49.7 N	12.8 W	06	30	M 50	10 NM	25	1010.0	6.7	12.0	5	13	32	14	29.5
GTOT	12	56.8 N	07.5 W	12	27	M 45	5 NM	25	0987.0	5.1	7.8	8	19.5	28	12	39
C7C	12	52.7 N	35.5 W	18	23	43	5 NM		1009.5	5.0	5.9	13	21	28	17	24.5
GBJR	12	44.2 N	19.7 W	18	31	M 11	10 NM	60	1030.9	10.1	11.7	4	6.5	31	12	26
UVWZ	12	57.8 N	09.9 W	18	29	33	10 NM		0987.2	4.4	10.2	11	28	31	11	28
FNGM	13	49.1 N	25.9 W	12	24	M 50	10 NM	02	1018.5	12.0	10.8	4	16.5			
GTOT	13	59.5 N	06.3 W	12	27	M 12	10 NM	26	1002.2	5.8	9.5	3	3	26	13	32.5
KFCS	13	46.6 N	16.6 W	18	25	25	10 NM	02	1028.0	11.1	11.7	4	5	31	11	26
UVJZ	14	55.0 N	15.3 W	00	27	41			0997.6	3.4	9.5	12	32.5	27	12	32.5
GUUV	14	37.8 N	11.6 W	06	06	20	10 NM		1020.1	14.0		6	6.5	35	13	26
C7C	14	52.7 N	35.5 W	09	29	M 39	5 NM	26	1011.3	- 0.4	5.6	12	19.5	29	16	24.5
TFWB	14	56.2 N	35.4 W	09	29	M 52	1 NM	15	0996.2	- 1.3						
GOYD	14	36.9 N	09.1 W	12	12	13	5 NM		1020.7	15.9	15.0	3	6.5	31	8	31
GUFV	14	38.9 N	11.0 W	12	03	13	10 NM		1022.2	15.5	16.3	6	6.5	34	15	24.5
PCVH	14	46.1 N	26.8 W	12	02	M 68	5 NM	26								
GTHZ	14	42.8 N	09.4 W	18	34	M 18	10 NM	02	1020.1	11.5	12.3	4	5	32	7	26
GTHZ	15	47.1 N	06.3 W	12	22	M 38	5 NM	02	1006.2	11.8	11.0	5	11.5	27	9	26
GTOT	15	58.5 N	06.4 W	12	23	M 42	2 NM	69	0980.1	3.7	6.9	6	19.5	25	15	32.5
VRKP	15	40.7 N	62.5 W	12	30	M 48	10 NM									
Y5RW	15	48.1 N	06.7 W	12	21	M 48	2 NM	25	0999.0	12.2	6.0	8	16.5			
FABL	16	17.5 N	58.8 W	06	01	50	10 NM		1015.5	24.0						
TFAR	16	58.8 N	12.4 W	06	36	M 52	.25 NM	26	0989.0	0.0						
FNQZ	16	49.6 N	02.4 W	09	28	48	10 NM		0999.5	8.0	10.5	7	13			
GUPM	16	50.3 N	01.6 W	12	24	M 52	10 NM	15	1000.8	8.5		6	14.5	24	7	19.5
GUUV	16	48.8 N	04.7 W	18	27	M 20	10 NM	16	1005.3	7.6	10.0	5	10	29	10	29.5
GTOT	17	56.1 N	07.9 W	06	31	M 33	10 NM	01	0997.4	7.0	8.2	6	13	30	10	24.5
GYAP	17	58.9 N	11.9 W	06	35	M 50	5 NM	81	1002.4	5.2	8.3	5	10	34	10	16.5
TFWB	17	46.8 N	52.7 W	18	29	58	5 NM									
C7C	18	52.7 N	35.5 W	18	23	M 50	2 NM	81	0989.8	4.4	5.4	17	24.5			

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves+ Period sec.	Sea Waves+ Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
ATLANTIC	MAR															
ONBT	19	43.5 N	44.7 W	00	33	M 48	5 NM	01		5.0	13.0					
FNQZ	19	44.2 N	07.1 W	12	27	M 66	2 NM	21	1030.9	13.9	13.8	5	8			
KFEZ	19	47.2 N	53.5 W	18	30	M 46	10 NM	77	1002.6	- 0.6		8	19.5	31	10	49
ELXV	20	50.6 N	18.4 W	12	20	47	2 NM	10	1012.0	12.0	7.5	8	19.5	20	12	24.5
VRKC	20	46.7 N	43.4 W	12	26	M 41	5 NM	02	1011.5	2.3	5.3	8	10	27	13	26
SOQT	20	51.8 N	29.1 W	18	24	M 52	2 NM	25	1000.8	9.0		8	23			
URKC	20	46.3 N	45.1 W	18	26	M 20	10 NM	02	1015.8	1.6	3.5	5	5	31	14	26
OZSS	21	59.5 N	41.5 W	06	27	M 52	1 NM	26	0984.3	1.7	3.3	6	10			
SOEF	21	52.3 N	19.0 W	06	29	M 62	5 NM	03	1015.1	10.0						
ELXV	21	50.5 N	23.7 W	12	27	32	10 NM	03	1025.5	11.5	7.5	6	13	27	12	24.5
EVHM	21	23.6 N	16.8 W	12	02	23	5 NM		1026.6	19.0	17.5	8	26	32	8	6.5
JREG	21	37.6 N	57.0 W	12	34	M 45	.5 NM	07	1001.5	13.0		4	8	32	8	26
USXE	21	59.7 N	29.9 W	18	24	M 52	1 NM	23		1.5	5.8	8	28			
UZLM	22	20.6 N	36.6 W	00	12	M 50		02	1015.4							
GONO	22	46.8 N	33.3 W	18	19	M 32	5 NM	05	0996.9	14.5	13.0	6	13	16	8	26
WSVR	22	40.1 N	40.9 W	18	18	M 24	10 NM	01	0998.3	17.0	15.0	4	5	24	6	29.5
GONO	23	47.3 N	29.3 W	06	18	M 34	10 NM	02	1007.4	13.8	12.0	5	19.5	17	9	26
KPGO	23	38.5 N	44.6 W	12	24	48	1 NM	99	1003.7	16.6	16.6	8	19.5	24	8	23
EWGG	23	33.6 N	17.7 W	18	13	M 60	10 NM		1022.5	19.0						
GONO	24	48.1 N	21.8 W	06	18	M 30	10 NM	02	1023.3	12.1	12.0	5	19.5	16	10	26
ELXV	24	47.5 N	42.3 W	12	27	63	2 NM	07	0994.0	3.0	7.2	10	29.5	23	14	37.5
7JZA	24	44.5 N	44.3 W	18	28	M 44	1 NM	25	1010.0	4.5	12.5	6	10	27	10	29.5
FNHD	24	41.7 N	10.4 W	18	04	58	10 NM	02	1016.4	14.2	16.5	2	10			
GOZO	24	51.3 N	37.9 W	18	18	M 42	5 NM		0983.8	6.0	2.0	3	8	22	7	24.5
ELXV	25	47.3 N	43.3 W	00	35	48	10 NM	01	1016.0	2.0	1.7	8	19.5	31	12	24.5
FNFF	25	23.1 N	16.6 W	00	01	60			1011.5							
KFEJ	25	47.6 N	30.2 W	12	27	40	10 NM	03	1015.5	9.4	12.2	6	16.5	27	7	24.5
SHJA	25	47.1 N	44.1 W	12	29	M 68	2 NM	70	1026.0		13.0	4	14.5	25	8	11.5
VCBD	25	50.1 N	32.0 W	12	29	M 32	10 NM	01	1011.8	8.0	11.0	7	6.5	29	7	24.5
9VXX	25	44.6 N	36.8 W	18	29	M 36	5 NM		1025.4	6.0	13.8	15	23	32	14	24.5
UVXW	26	11.4 N	17.3 W	00	34	08	10 NM			19.5	20.4	4	3	34	0	49
YTQI	26	36.1 N	03.6 W	00	08	48	5 NM	13	1013.0	14.0						
GRUJ	27	39.9 N	09.9 W	06	17	M 10	> 25 NM	02	1013.3	12.9	13.8	1	1.5	32	15	26
UUSH	27	26.4 N	60.1 W	06	01	M 58		10								
KCSA	27	36.1 N	23.6 W	12	35	50			1016.7	11.1	18.3	8	13			
PGNP	27	39.9 N	23.6 W	12	34	M 48	2 NM	63	1010.0	12.7	14.7	9	26			
SYDH	27	47.4 N	42.6 W	18	15	M 52	10 NM	02	1026.0	10.2	9.3					
KCSA	28	36.9 N	23.1 W	00	36	50	5 NM	03	1004.9	11.1	18.3	8	13	33	10	14.5
PCOB	28	01.1 N	00.4 E	06	13	07	10 NM		1009.1	28.1	28.5	2	1.5	18	50	34.5
VRKP	28	47.1 N	21.0 W	06	01	M 54	10 NM	25	1014.4	10.0	10.0					
GPEQ	28	32.1 N	24.5 W	12	33	45	2 NM	18	1006.3	12.5	17.8	5	13	36	6	26
XCMT	28	41.5 N	26.3 W	12	36	M 59		22	0990.1							
KEAF	29	26.8 N	86.4 W	00	06	50	5 NM	02	1015.2	21.0	24.4	13	14.5			
GYAS	29	26.6 N	34.1 W	12	36	18	10 NM		1022.3	19.4	20.8	2	6.5	02	10	41
SQDH	29	43.1 N	51.5 W	12	28	M 50	5 NM	26		20.4	1.2					
C7C	29	52.7 N	35.5 W	15	16	M 47	.5 NM	63	1001.5	8.3	5.3	14	24.5	16	19	28
IBPA	29	41.6 N	53.5 W	18	32	35	2 NM	70	1023.2	1.0	3.5	10	24.5			
SQDX	30	35.8 N	16.1 W	00	03	66	1 NM	63	1010.2	16.0						
UZRC	30	22.2 N	65.4 W	06	11	58		02	1016.6	26.0						
GYAS	30	30.2 N	31.8 W	12	35	11	10 NM		1022.0	17.4	20.3	2	3	01	6	26
RIGG	30	47.0 N	48.8 W	12	26	M 37	2 NM	85	1010.7	- 0.9	2.0	9	26			
SQDH	30	45.3 N	55.6 W	12	26	54	5 NM	03	1018.0	- 1.0	0.0					
SIGR	30	29.2 N	47.7 W	18	09	02	> 25 NM		1022.5	20.0	22.0	0	0	34	8	24.5
USWD	31	11.3 N	17.2 W	12	36	62	10 NM		1005.3	22.0	19.0	6	6.5			

+ Direction for sea waves same as wind direction
X Direction or period of waves indeterminate
M Measured wind

NOTE: The observations are selected from those with winds ≥ 35 kn or waves ≥ 25 ft from May through August (≥ 41 kn or ≥ 33 ft, September through April).

North Pacific Selected Gale and Wave Observations

January, February and March 1982

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
PACIFIC	JAN.															
SLUW	1	53.7 N	179.5 E	00	24	M 70	5 NM		1018.0	3.0	4.0					
5MHS	1	48.7 N	145.2 W	00	31	M 48			1013.0	5.5	8.0	10	32.5	31	0	16.5
UIGW	1	52.7 N	149.9 W	00	36	50	10 NM	02	1019.0	2.0	4.0	15	23			
WNEJ	1	45.9 N	130.5 W	12	25	M 54	2 NM	65	0995.6	2.2	10.0	6	13	27	9	16.5
ELUD	2	34.6 N	161.6 W	06	21	M 78	10 NM									
3FJA	3	42.1 N	171.9 E	03	02	M 13	10 NM	02	1010.3	8.5	13.0	XX	8	34	XX	41
ESBY	3	54.4 N	145.7 E	06	33	50	1 NM	72	1014.6	-11.3						
UPGC	3	52.2 N	158.6 E	12	08	33	1 NM	73	1016.6	- 6.3	2.5	9	13	09	12	52.5
JFKU	4	26.2 N	135.9 E	06	15	M 48	.25 NM	65	1011.5	20.0	22.0	4	10	04	4	10
5MHS	5	53.5 N	173.5 W	00	05	M 38	1 NM	22	1020.5	1.0	4.0	10	32.5	05	2	13
JGLU	5	34.2 N	142.7 E	00	19	M 70	.25 NM	07	0998.0	19.5	20.0	6	13	18	10	16.5
JKXM	5	30.0 N	174.0 W	00	25	M 50	2 NM	07	0999.2	18.0	20.0	8	13	26	8	16.5
UKDZ	5	49.2 N	153.6 E	00	16	M 50	200 YD	86	1012.2	0.5	3.0	10	14.5			
ONZG	5	34.5 N	168.8 W	06	22	M 55	5 NM	21	0983.3	14.7	15.0					
UNJG	5	51.3 N	156.4 E	06	16	47	.25 NM	73		0.4	2.0	12	36			
WNPD	5	46.9 N	155.6 E	06	16	M 48	5 NM	70	1014.5	3.3	2.2	6	24.5			
KEXB	5	42.0 N	173.6 E	12	02	35	5 NM	02	1019.3	5.5	7.8	4	8	36	7	32.5
WZJG	5	37.9 N	172.0 W	12	36	42	5 NM	02	0978.0	8.9	13.3	8	13	36	9	24.5
JLDG	5	30.9 N	167.5 W	18	28	M 21	10 NM	02	1001.5	17.0	17.5	5	16.5	28	7	32.5
UVZY	5	36.1 N	141.0 E	18	11	78	5 NM	60	1011.5	8.5	17.0					
D5EF	6	50.4 N	160.0 E	00	14	50	1 NM	65	0993.5	1.5	3.5	8	23	14	12	32.5
JCLL	6	47.9 N	159.0 E	00	18	M 59	1 NM	07	0991.0	6.0						
JKXM	6	29.7 N	179.1 W	00	33	M 43	2 NM	26	1005.3	21.0	20.5	8	16.5	31	12	24.5
JRZR	6	24.5 N	177.5 W	00	28	M 41	5 NM	21	1013.8	23.0	25.5	8	24.5	30	10	21
5LJT	6	51.0 N	161.0 E	06	19	M 45	1 NM	69	0990.0	- 3.0	- 1.0	12	36	36	12	32.5
D9FK	6	28.9 N	177.6 E	06	36	M 60	5 NM	01	1017.0	15.5						
KEXB	6	41.6 N	178.5 W	12	36	40	5 NM	25	1007.8	8.6	11.1	4	11.5	36	7	32.5
KGJX	6	51.1 N	161.9 W	18	01	M 52	2 NM	26	1011.2	1.7	5.0	6	8	01	9	11.5
DZMZ	7	25.3 N	156.2 W	00	01	04	10 NM	01	1018.5	22.2	22.0	5	1.5	30	12	50.5
KGJX	7	50.4 N	164.8 W	00	01	M 50	2 NM	26	1008.0	1.7	5.0	6	8	01	7	13
5LJT	7	47.3 N	157.4 E	06	32	M 20	5 NM	22	1010.0	- 5.0	- 1.0	6	10	36	10	32.5
5MUE	7	33.8 N	137.5 E	06	34	42	> 25 NM	02	1016.0	9.0	18.0	10	24.5	33	12	24.5
KHRF	7	36.4 N	144.8 E	12	03	M 58	2 NM	13	1010.5	7.5	12.0	3	10	29	5	11.5
5MKM	7	38.1 N	149.5 E	18	27	M 51	5 NM	02	1009.2	6.0	12.0	7	11.5	09	8	11.5
KLHP	7	41.1 N	170.5 E	18	28	45	10 NM	02	0999.5	9.4	6.1	12	19.5	27	10	26
GRAA	8	52.3 N	156.5 W	18	05	M 48	1 NM	10	0990.6	2.0	4.2	9	26	04	10	19.5
JFPK	9	53.5 N	151.2 W	06	02	M 51	2 NM	50	1007.0	3.0						
5LJT	9	36.8 N	142.2 E	12	22	M 25	10 NM	01	1000.0	10.0	13.0	8	6.5	22	11	49
ABKP	9	53.0 N	173.7 W	18	01	58										
JIOW	10	38.7 N	171.2 E	06	29	M 41	2 NM	60	0988.0	8.5	13.5	10	14.5	30	11	26
BOTZ	11	05.1 N	126.4 E	00	36	M 68	5 NM	60	1008.9	25.0	27.8					
JFOT	11	41.0 N	178.2 E	00	02	M 37	.5 NM	63	0991.5	8.0	12.5	5	10	03	11	32.5
EWPJ	12	48.2 N	149.5 E	18	16	48	5 NM	02	1015.0	1.0	3.2	7	6.5			
LHUK	13	35.0 N	142.2 E	06	20	M 73	5 NM	02	1011.0	16.0		8	8			
D5NW	13	43.4 N	169.9 W	23	01	M 47	5 NM		0993.6	6.5	7.5	24	28	01	10	11.5
WLDF	14	56.2 N	140.9 W	00	24	M 50	2 NM	61	1002.0	6.0	5.0	6	10	22	12	19.5
ABKP	14	45.3 N	150.4 E	06	27	M 50	5 NM	07	1003.5	1.0	3.0	6	10	27	4	13
JJAD	14	46.3 N	152.2 E	06	29	60	2 NM		0991.5	3.0	1.0	3	11.5			
VRFE	14	33.2 N	152.0 E	06	21	M 64	5 NM	21	1009.0	17.9	22.0	3	6.5	21	5	10
3EOS	15	54.3 N	172.5 W	00	27	M 30	5 NM	02	1008.4	0.0	3.0	8	32.5	17	7	3
PCPW	15	49.3 N	159.2 E	00	23	M 41	5 NM	26	1005.8	4.3	3.5	8	13	23	12	26
ULEP	15	51.8 N	149.2 E	00	36	M 54	1 NM	72	0972.9	- 5.7		9	29.5			
GWOL	16	53.5 N	159.5 W	06	31	M 55	200 YD	69	1002.4	1.3						
D5NW	16	46.5 N	143.1 W	21	28	M 50	5 NM	03	1013.6	7.0	6.0	25	32.5	28	10	11.5
WFQE	17	48.3 N	132.7 W	00	25	M 50	5 NM	81	0997.0	7.8	8.3	6	13			
H3SY	17	35.3 N	142.4 E	18	05	M 15	10 NM	02	1019.5	6.0	18.0	3	1.5	XX	10	50.5
JBKP	17	52.9 N	142.4 W	18	31	M 41	2 NM		1010.5	4.5	11.0	7	13	30	10	29.5
WEZD	17	39.9 N	169.8 E	18	17	M 53	10 NM	02	0993.0	13.3	12.2	4	8	18	10	5
JLRV	18	53.9 N	141.4 W	00	31	35	5 NM	02	1006.0	3.0	10.5	3	10	29	7	32.5
DGVK	18	15.3 N	160.0 W	06	11	M 75	10 NM	01	1009.5		25.4	4	6.5	10	7	10
GBPW	18	23.2 N	139.4 W	06	07	M 18	> 25 NM	01	1019.6	21.4	24.0	4	3	06	0	39
OXSF	18	43.3 N	132.6 W	06	32	35	10 NM	01	1017.0	8.0		4	8	30	8	32.5
D5VI	18	14.5 N	130.0 E	12	01	M 62	5 NM	02	1011.5	24.5	27.0					
KHRK	18	51.2 N	166.2 E	18	31	M 70	.5 NM	39	0996.0	0.0	3.0	5	16.5	32	8	21
WGKF	18	52.9 N	145.9 W	18	29	M 30	2 NM	25	1018.2	5.0	6.0	6	32.5	30	7	5
FNNL	19	33.7 N	141.7 E	00	26	50	5 NM		1001.0	11.4	18.2	8	26			
S6GZ	19	50.9 N	171.4 E	00	25	M 50	5 NM	02	0982.5	1.7	4.0	2	13	23	8	29.5
USZT	19	56.1 N	163.1 E	00	32	M 48	50 YD	76	1040.4	- 9.0						
JPZD	19	51.0 N	166.2 E	03	25	M 44	5 NM	16	0983.0	3.5	6.5	9	26	26	10	19.5
5MKK	19	34.5 N	155.5 E	12	25	M 50	50 YD	65	0999.0	16.0						

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
PACIFIC	JAN.															
ELCJ	19	38.0 N	160.3 E	12	16	M 55	2 NM	07	0992.0	15.1	16.0	6	23	25	8	13
EUDU	19	37.7 N	142.3 E	12	29	52	10 NM			1.2	7.0	7	8			
JFZJ	19	38.8 N	159.9 E	12	18	M 55	5 NM	03	0992.0	12.0	14.0	5	8	14	9	16.5
JHAQ	19	39.6 N	146.2 E	12	28	M 47	2 NM	26	0995.0	2.3	7.0	9	23	27	10	26
UWFT	19	44.4 N	147.0 E	12	02	M 50	1 NM	71	0978.6	- 4.0	2.0	8	10			
JDWH	19	33.3 N	139.5 W	18	05	M 18	5 NM	25	1028.5	14.0		2	3	04	10	54
WLDT	19	49.5 N	168.1 W	18	11	47	1 NM	60	0993.8	6.7	3.9	7	11.5	12	9	24.5
5MPK	20	43.5 N	152.0 E	00	29	M 52	200 YD	58	0982.0	0.0	4.0	3	10	29	5	19.5
A8IB	20	41.1 N	169.8 E	00	17	M 50	2 NM	61	0993.0	8.0	12.0					
WLDT	20	49.7 N	165.7 W	00	16	41	.5 NM	10	1000.2	7.2	3.9	7	13	16	12	28
DZRS	20	20.3 N	139.7 W	06	07	M 21	10 NM	03	1018.0	21.2		10	8	07	11	32.5
JHAQ	20	38.4 N	144.5 E	06	28	M 45	10 NM	02	1008.5	3.0	8.0	9	19.5	28	10	24.5
LEGY	20	31.4 N	166.3 W	06	32	M 50	10 NM	81	1002.0							
JCVL	20	31.0 N	159.9 E	12	27	M 50	5 NM		1009.4	20.0	21.5					
UPHH	20	48.2 N	177.3 E	12	18	M 48	1 NM		0988.2	1.4	6.0	8	23			
UTUH	20	32.3 N	170.5 E	18	22	48	2 NM	21	1005.9	14.0	16.0	12	29.5	23	10	19.5
WSDX	20	46.3 N	131.0 W	18	32	M 58	10 NM	02	1004.5	8.5		5	10	33	8	13
SLXC	22	21.2 N	168.3 W	00	33	M 18	10 NM	01	1010.0	23.0	24.4	5	5	34	8	41
WVFZ	22	35.3 N	142.8 E	00	36	30	10 NM	03	1014.2	12.2	17.8	4	3	04	8	41
JGJB	22	48.2 N	166.7 E	06	27	M 55	.25 NM	72	0974.0	1.0	0.0	7	10	26	9	16.5
JOWT	22	48.1 N	174.5 E	18	22	M 45			0981.0	- 1.0	5.0	4	6.5	22	10	26
WLDP	22	26.2 N	145.5 W	18	10	18	10 NM	60	1013.5	19.0	19.5	12	8	14	14	41
D7CG	23	48.1 N	155.9 W	00	27	M 54			0993.0							
JBUM	23	48.8 N	169.9 E	00	29	M 55	200 YD	75	0978.5	- 0.5	4.0	4	11.5	27	7	14.5
JOWT	23	47.8 N	174.1 E	00	27	M 78	.5 NM	85	0974.0	0.0	5.0	4	10	27	11	32.5
LYAL	23	38.7 N	143.2 E	12	31	50	2 NM		1013.4	0.2	9.6					
WLDP	23	24.3 N	150.4 W	12	18	20	10 NM	00	1005.5	23.0	22.3	4	5	18	14	41
UTPC	23	38.2 N	141.9 E	18	33	M 48	1 NM	07	1016.0	0.2	11.0	8	8			
BPKL	24	31.7 N	122.5 E	00	07	62										
D5O8	24	40.7 N	158.0 E	00	34	M 49	.5 NM	69	0978.5	4.0	8.0	7	26	34	9	16.5
KSPY	24	56.6 N	141.8 W	00	09	50	5 NM	22	0978.5	4.0	3.5	6	26	11	8	29.5
JABN	24	38.5 N	163.5 E	06	25	M 75	1 NM	25	0978.5	9.0	12.3			24	9	23
JAUD	24	39.0 N	161.5 E	06	30	M 51	.5 NM	16	0982.0	6.5	18.5	2	11.5	29	11	26
JJAD	24	38.4 N	165.1 E	06	25	M 48	2 NM	60	0986.0	12.0	13.0	6	14.5	21	12	23
JRYS	24	40.1 N	164.4 E	12	28	M 49	2 NM	26	0990.0	4.0	7.5	7	11.5	25	12	16.5
EWXP	25	54.3 N	162.4 E	00	02	33	.5 NM	73	0996.9	- 2.2	0.4	8	36		2	
JRYS	25	40.0 N	168.0 E	00	27	M 49	2 NM	69	0998.5	4.0	11.0	7	11.5	26	12	16.5
WPGE	25	45.6 N	174.0 E	00	25	60	5 NM	03	0979.0	6.1	5.6	6	10	22	5	19.5
JIRP	25	51.8 N	167.3 E	06	05	M 47	50 YD		0971.0	0.5	4.0	8	16.5	10	10	28
JABN	25	39.5 N	171.9 E	12	25	M 47	10 NM	01	1006.0	7.5	12.0	5	13	26	9	24.5
UVYY	25	50.7 N	156.2 E	12	76	54	10 NM		0999.6	- 3.6	0.2					
GXIR	25	48.7 N	134.[illegible] W	18	03	M 52	1 NM	63	0982.1	3.9	6.1	6	29.5			
JIFS	25	50.1 N	130.3 W	18	10	M 52	1 NM	65	0994.5	5.5	8.0	4	13	09	7	16.5
PLYA	25	47.3 N	136.1 W	18	33	M 50	5 NM		0985.5	6.0	8.0	0	28	XX	XX	28
WLDF	25	49.7 N	134.0 W	18	09	M 65	.25 NM	59	0982.0	4.5	7.6	7	13			
GXIB	26	48.5 N	134.4 W	00	34	M 52	.5 NM	63	0975.0	4.2	6.0	8	26			
H3NO	26	33.0 N	163.4 E	00	23	M 50	1 NM	54	0998.0	16.0	18.0	4	16.5	23	14	28
JIFS	26	50.8 N	132.0 W	00	05	M 52	2 NM	62	0979.8	3.5	8.0	4	14.5	05	7	16.5
JPND	26	51.0 N	133.3 W	00	05	M 68	1 NM		0981.0	5.0	7.0	7	16.5	07	0	19.5
URHH	26	48.3 N	134.5 W	00	34	M 48	.25 NM	45	0977.0	3.5	8.0	7	14.5	07	8	13
8KRN	26	34.9 N	145.1 E	03	12	M 25	5 NM	15	1016.5	11.0	18.0	6	6.5	32	6	32.5
JKJD	26	25.6 N	173.6 E	03	17	M 09	10 NM	15	1017.0	24.0	25.5	2	1.5	31	10	39
OXFU	26	47.0 N	153.7 E	06	32	M 45	.5 NM	77	0999.9	0.0	3.0	8	26	36	12	23
5MZH	26	50.2 N	130.0 W	12	31	M 48	5 NM	02	0977.0	5.0	1.0	5		31	5	8
UBVU	26	04.5 N	152.5 W	12	13	10			1011.4	26.1	29.0	2	0	08	8	32.5
CYWK	26	51.3 N	135.6 W	18	30	M 48	> 25 NM	01	1000.0							
ELAT4	26	45.2 N	167.5 W	18	22	M 31	5 NM	02	1010.5	8.2	6.0	9	36	23	1	3
UYDA	26	44.8 N	147.8 E	18	33	23	10 NM		1018.2	- 5.7	1.6	6	32.5			
BPJF	27	20.8 N	137.5 E	12	02	78										
H9EV	28	53.7 N	178.7 E	00	22	M 60			0968.0							
ONHN	28	42.1 N	173.9 W	00	24	M 41	10 NM	88	0999.6	8.6	7.5	3	5	26	8	29.5
UTFV	28	44.5 N	147.9 E	00	12	M 58	10 NM			- 3.5						
WLDT	28	54.0 N	156.7 W	00	15	42	1 NM	63	0975.0	6.1	3.9	8	16.5	16	12	24.5
JBJO	28	32.9 N	149.5 E	06	01	50		64	1003.2		16.5	6	8	26	10	14.5
DUHF	28	30.0 N	162.5 E	12	16	17			1013.0	26.0		3	3	15	14	39
D5O9	29	44.3 N	172.1 W	00	26	M 27	2 NM	88	1000.5	6.5	8.0	5	13	27	9	36
ELAT4	29	43.0 N	171.7 W	00	27	M 30	5 NM	00	1000.4	9.0	7.0	10	32.5	27	0	32.5
H9EV	29	53.6 N	172.9 E	00	27	M 52	10 NM	02	0987.0							
DUHF	29	30.3 N	164.2 E	17	15	17			1013.0	23.0		3	3	15	14	39
JAUD	29	46.5 N	155.9 W	18	27	M 48	10 NM	03	1008.0	5.0	8.0	4	6.5	25	9	16.5

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
PACIFIC	JAN.															
KRDB	29	50.6 N	129.8 W	18	24	M 40	2 NM	11	1009.5	9.2	9.0	3	19.5	24	7	32.5
UVMT	29	38.2 N	153.3 E	18	30	M 56	.5 NM	65	0988.2	9.0	11.0					
8JXB	30	37.6 N	179.0 E	06	20	M 54	200 YD	54	0991.0	15.0		4	13			
GBPW	30	33.5 N	155.9 E	06	31	M 55	5 NM	18	1000.7	10.2						
JKJD	30	30.4 N	152.9 E	06	29	M 38	10 NM	25	1008.7	14.5	21.0	4	10	31	12	32.5
KGJB	30	37.3 N	155.2 E	06	31	M 53	2 NM	50	0996.5	8.0	16.0	4	8	32	11	11.5
LIBD	30	34.5 N	159.5 E	06	28	50	10 NM	03	0997.0	12.5	19.0	8	26			
DUMF	30	31.5 N	179.2 E	16	11	18			1006.0	21.5		3	5	16	14	39
KADB	30	26.7 N	157.3 E	18	34	30	10 NM	01	1013.5	18.0	19.4	4	19.5	29	10	32.5
KLMR	30	27.9 N	142.6 W	18	15	28	2 NM	65	1009.1	18.3	18.9	6	14.5	11	13	32.5
KRDH	30	39.1 N	159.8 E	18	36	47	10 NM	02	0993.5	5.6	10.0	5	14.5	35	6	24.5
OYBF	31	34.0 N	164.2 E	00	31	50	5 NM	02	1003.5	13.5		10	26			
GYAB	31	32.7 N	163.5 E	06	30	M 45	5 NM	18	1007.1	12.1	17.9	12	29.5			
JMJF	31	37.4 N	165.5 E	06	31	38	10 NM		0997.0	7.0	13.0	7	19.5	29	12	32.5
LIBD	31	34.4 N	169.1 E	06	28	50	5 NM	80	0997.5	10.0		14	29.5			
WEZM	31	36.2 N	171.0 E	09	28	M 52	5 NM	16	0987.8	8.3	13.3	8	39	30	8	39
JAUD	31	48.5 N	138.0 W	18	21	58	2 NM		1026.0	7.5	7.0	4	6.5	25	6	11.5
DUMF	31	31.7 N	172.4 W	20	15	20			0998.0	24.0		3	6.5	25	14	39
	FEB.															
7JZA	1	31.0 N	177.1 E	00	27	M 42	10 NM	25	1005.0	13.0	16.0	8	11.5	29	10	31
M9QV	1	32.4 N	179.5 W	00	28	60	5 NM	03	0998.0	14.8	16.7	10	24.5	30	12	26
KIMD	1	33.0 N	176.5 E	00	30	47	10 NM	16	1004.0	15.0	19.4	3	13	30	8	24.5
WFZM	1	36.6 N	176.6 E	00	30	M 35	5 NM		0995.5	7.7	11.6	8	24.5	27	8	24.5
DUMF	1	31.7 N	170.2 W	03	15	20			0998.0	24.0		3	3	25	14	39
JCPI	1	21.9 N	163.1 W	06	10	67	> 25 NM		1012.8	23.0	26.0					
JMJD	1	33.8 N	144.3 E	06	30	M 40	5 NM	25	1002.0	13.0	19.5	5	13	28	12	26
ULPL	1	38.6 N	142.2 E	06	31	M 56	10 NM	02	1007.7	1.5						
ELXP	1	53.4 N	178.3 E	12	35	M 50	5 NM	03	0992.0	0.0	5.0	5	19.5	38	6	16.5
UFXX	1	51.7 N	158.5 E	18	06	43	10 NM		0991.0	- 5.9	1.0	11	29.5			
3FDS	2	33.7 N	167.3 E	00	29	M 25	10 NM	03	0997.2	15.8		XX	32.5	30	9	32.5
EKNY	2	36.2 N	159.2 E	00	29	M 48	5 NM	15	0995.0	10.0						
CYNX	2	38.0 N	161.5 E	00	27	M 60	2 NM		0987.1	8.4	14.0					
UTBF	2	51.5 N	156.5 E	00	09	02	10 NM		0992.5	- 6.4				23	22	34.5
WFZM	2	37.3 N	174.1 W	00	33	M 30	10 NM	15	1002.5	8.9	11.7	6	14.5	27	8	24.5
3FED	2	36.7 N	172.9 E	06	20	M 53	5 NM	25	0994.0	13.5	17.0	5	13	18	5	13
WLDT	2	37.6 N	142.9 E	06	33	35	10 NM	01	1014.9	3.9	13.4	6	10	34	12	24.5
KSCJ	2	32.9 N	145.0 E	06	35	35	10 NM	02	1012.1	11.7	17.2	8	16.5	35	11	26
JFJO	2	36.0 N	146.9 E	09	34	M 34	1 NM	27	1012.4	5.0	13.0	7	14.5	31	9	24.5
ELJT	2	47.6 N	163.9 E	12	08	M 55	.25 NM	23	0980.0		5.1	9	14.5			
EWAI	2	45.6 N	150.0 E	12	33	50	1 NM	70	1001.3	- 5.8	6.8	19	26			
LUMF	2	31.8 N	159.0 W	15	17	18			1003.0	22.0		2	1.5	18	12	55.5
UWHE	2	47.7 N	157.1 E	18	33	54	10 NM		0996.9	- 1.0	1.7	4	5			
SLJC	2	44.2 N	161.0 E	00	27	M 50	200 YD	72	0971.0	2.0	6.0	4	6.5	27	13	19.5
JPJM	2	43.8 N	150.1 E	00	30	M 51			0963.0	- 2.0	7.0	4	11.5	34	8	16.5
JFIR	3	38.5 N	160.4 E	00	28	M 32	10 NM	22	0990.6	12.0	12.5	6	8	31	10	24
OXNX	3	40.4 N	170.0 E	00	26	M 40	.5 NM	98	0986.2	5.4	13.0	4	16.5	26	6	29.5
HOGV	3	31.3 N	165.7 E	06	31	45	10 NM	25	1004.8	13.0	19.5	8	11.5	29	11	26
JAVP	3	36.5 N	168.1 E	06	28	M 48	1 NM	82	0995.0	6.0	13.0	6	8	30	9	14.5
JCJR	3	34.9 N	172.2 W	06	18	M 35	5 NM	02	1003.5	15.0	15.0	7	8	19	9	46
JLRV	3	41.8 N	171.5 W	06	18	M 40	.5 NM	60	0992.0	8.5	14.0					
JTFS	4	48.9 N	170.7 E	12	05	M 56	2 NM	23	0982.5	1.0	3.0	6	14.5	06	7	19.5
DUMF	4	32.0 N	155.1 W	23	18	17	5 NM	01	1005.0	23.0		2	1.5	24	13	55.5
G7FW	4	39.1 N	167.6 E	00	29	M 48			0992.2	6.0						
JIGA	4	34.5 N	166.7 W	00	18	M 27	1 NM	61	1001.5	14.0	15.0	6	26	19	7	10
JPJO	4	36.4 N	161.7 E	06	27	20	10 NM		1006.0	9.0	13.0	5	10	31	15	24.5
JMZL	4	53.9 N	173.9 W	06	10	M 68	2 NM	61	0996.0	3.5		2	5			
JPLN	4	36.4 N	142.4 E	06	11	M 72	10 NM	03	1014.6	15.0	16.0	8	11.5	12	10	13
KSEJ	4	53.1 N	134.5 W	18	04	64										
UFXX	4	53.9 N	160.5 E	18	03	35	10 NM		0996.3	- 2.0	0.5	6	13	04	9	26
KCJW	6	46.0 N	156.2 E	12	29	38	5 NM	68	0999.1	- 1.0	2.0	6	32.5	29	9	42.5
WFZD	6	50.3 N	161.0 E	06	30	M 56	5 NM		0974.5	0.6	3.9	6	8	03	7	6.5
NYCO	6	56.6 N	176.2 W	22	16	55	2 NM	07	1000.4	4.4	3.3	10	29.5			
NYCO	6	56.5 N	176.0 W	00	18	48	5 NM	01	1005.2	4.4	3.9	9	26			
JFQU	7	34.9 N	153.4 E	06	31	M 48			0995.0	12.5		3	6.5	29	9	16.5
SMUU	7	36.7 N	148.1 E	09	32	M 50	.25 NM	76	1006.0	4.0	17.0	5	19.5	31	8	26
ELCJ	7	35.9 N	150.4 E	06	25	M 53			0989.0	12.0	16.0	7	26	25	12	14.5
JPCT	7	33.5 N	152.5 E	12	28	49	5 NM		1007.0	9.5	17.0	6	10	28	8	13
JCVS	7	36.6 N	165.3 E	12	15	M 54	2 NM	65	0993.2	12.5	14.0					
JD7Q	7	37.5 N	164.2 E	12	13	M 60	1 NM	63	0990.5	11.0	13.0	6	10	13	10	13
HRGO	7	39.3 N	167.6 E	17	09	M 50			0999.1	8.0						
JFQU	8	34.9 N	158.9 E	00	27	M 55			1004.0	9.5		18	32.5	27	18	32.5
EWSF	8	32.0 N	161.0 E	03	28	35	5 NM		1007.2	14.0	17.0	8	13	28	10	24.5
JFZJ	8	34.8 N	156.7 E	03	31	M 42			0999.5	9.0	17.5	6	13	31	13	24.5
ELCJ	8	36.9 N	164.1 E	06	27	M 48	5 NM	15	0996.0	12.5	16.0	7	29.5	27	5	19.5
JD2C	8	38.3 N	167.7 E	06	22	M 50	5 NM	02	0990.8	11.0	12.0	6	17	22	10	17
SFB063	8	06.0 N	158.8 E	06	02	M 56		03	1012.7		26.3					
LNBE	8	32.0 N	156.9 W	06	07	54	2 NM	50	1010.5	16.0	15.9	7	8	06	10	17
3FTR	8	40.3 N	171.5 E	12	14	M 55			0994.0	5.0	1.0	9	16.5	14	9	16.5
JGRB	8	52.3 N	168.5 E	12	11	M 49	10 NM	02	1012.5	3.5	4.0	7	10	22	6	8

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
PACIFIC	FEB.															
PGDC	8	25.5 N	121.0 E	12	04	M 78	5 NM	02	1023.8	12.2	18.0	4	8	04	7	16.5
HOVS	8	47.2 N	157.1 E	18	31	M 60	50 YD	85	0992.5	0.0	0.0	3	21	31	8	21
UFOX	8	52.5 N	160.0 E	18	04	46	50 YD	73	0993.5	- 2.0						
HOVS	9	46.2 N	155.3 E	00	29	M 48	50 YD	86	0993.1	- 5.0	0.0	8	21	29	8	21
JTOW	9	44.4 N	170.5 E	00	20	M 29	5 NM	02	1002.5	4.0	4.0	4	11.5	19	9	26
JMLP	9	47.2 N	150.6 E	00	30	M 52	.5 NM	22	0992.5	- 2.5	0.6	9	24.5			
UPGW	9	50.2 N	155.9 E	00	34	M 48	1 NM	73	0986.9	- 6.2						
UFMM	9	53.1 N	171.8 E	00	11	M 48	5 NM	07	1008.9	3.0	3.0	8	23			
USKY	9	21.3 N	173.1 W	00		M	10 NM	02	1012.4	24.5	24.0			07	60	32.5
EWVR	9	51.4 N	158.0 E	06	10	31		73	0976.7		0.2	6	21	09	8	26
HPLR	9	47.9 N	161.3 E	06	25	M 60	1 NM	40	0982.0	0.0	2.0	12	11.5	25	6	11.5
KHFF	9	51.6 N	166.2 E	06	13	M 55	1 NM	10	0986.1	3.2	1.0	8	29.5			
ZCKP	9	53.8 N	170.0 E	06	13	M 38			1004.2	4.5		8	19.5	13	12	29.5
EUDT	9	48.8 N	154.6 E	12	30	M 43	1 NM	70	0984.1	- 6.3	1.2	11	32.5			
JERS	9	48.5 N	156.6 E	12	25	M 51	.5 NM	71	0985.5	- 1.5	2.0	6	19.5	27	10	23
JKVY	9	52.2 N	167.6 E	12	17	M 35	2 NM	15	1003.5	2.5	1.0	5	13	17	7	26
COLG	9	32.4 N	174.8 W	18	01	55										
3FPA	10	51.3 N	165.9 E	00	18	M 49	5 NM	76	1016.0	2.0	1.0	18	24.5	18	12	21
PLVA	10	30.1 N	162.3 W	00	05	M 20	10 NM	02	1005.4	20.1	18.0	7	8	06	11	42.5
WZJE	10	25.1 N	113.0 W	00	32	15	10 NM	02	1015.0	16.6	16.6	2	8	32	14	24.5
ZCKP	10	52.4 N	170.3 E	00	21	24	10 NM	01	1023.8	3.0	3.0	3	13	20	6	26
LIJR	10	54.0 N	153.9 W	06	32	50	10 NM	01	1027.4	3.0						
SPUF	11	53.6 N	150.7 W	12	34	45	10 NM	02	1002.0	2.0	3.0	10	24.5	34	12	28
L7XP	11	34.8 N	166.1 E	18	32	30	5 NM	02	1002.0	8.0	14.0	6	5	32	8	26
KNLO	11	27.3 N	143.4 W	18	18	08	10 NM	02	1010.5	20.0	20.0	3	1.5	19	10	52.5
KPDF	12	21.1 N	158.6 W	00	23	M 52	10 NM	80	1003.0	22.5	25.0	10	29.5	21	11	32.5
JFAW	12	47.5 N	174.5 W	06	02	M 70	10 NM	02	1012.5	6.5		5	6.5			
JFDG	12	32.4 N	133.1 E	09	04	14	10 NM		1020.7	10.9	19.4	4	5	19	7	32.5
DRON	12	48.8 N	177.0 E	23	08	M 50	2 NM	10	1012.0	6.0	7.0	11	16.5	08	14	23
WRDE	13	22.5 N	163.8 W	00	25	M 24	> 25 NM	02	1006.0	25.0	24.0	7	11.5	29	11	32.5
KHRN	13	36.4 N	166.7 E	00	30	M 48	10 NM	02	0999.6	10.0	14.0	4	19.5	32	9	24.5
UNXF	13	30.5 N	172.2 E	00	30	25	10 NM		1024.0	13.1	15.2	5	6.5	31	14	34.5
WSLM	13	28.0 N	141.2 W	06	21	50	5 NM	75	1014.0	21.1	21.1	6	10	21	6	10
COLG	13	34.0 N	169.5 E	12	30	M 44	10 NM	75	1001.1	11.6		3	13	30	8	32.5
GPJM	13	30.0 N	177.2 W	18	28	M 22	5 NM	15	0998.8	14.7	16.7	5	10	28	10	24.5
3FMW	14	33.5 N	174.9 W	00	26	M 35			0992.5	15.5	16.0	5	19.5	27	8	26
WRDE	14	23.7 N	170.2 W	00	25	M 30	10 NM	03	1008.0		23.0	7	26	26	11	23
KFDZ	14	29.7 N	150.0 W	00	27	40	10 NM	02	1008.0	16.0	17.0	7	11.5	23	12	32.5
UTAP	14	46.9 N	152.3 E	12	10	50			1016.2		1.7	2	1.5			
KACF	14	33.8 N	158.8 W	18	25	55	10 NM	03	0999.0	17.0	14.4	10	16.5	23	8	21
ELAC	15	39.6 N	174.4 W	00	34	M 50	.25 NM	61	0998.0	7.0	11.0	4	6.5	02	10	16.5
DSCO	15	38.4 N	170.2 E	00	08	M 22	5 NM	03	1009.5	12.0	15.0	6	18	06	6	29.5
KACF	15	33.4 N	154.9 W	00	25	60	10 NM	02	0998.2	17.2	14.4	10	16.5	23	9	21
ZCUV	15	15.4 N	178.0 W	00	30	M 48	10 NM	02	1016.0							
HOMV	16	34.6 N	146.7 W	00	26	M 80	10 NM	02	1008.5	18.0	17.0	5	19.5	26	7	23
GNNE	16	34.9 N	145.8 W	00	25	M 34	10 NM	02	1008.9	16.5	16.1	8	18	26	13	26
EPGZ	16	36.9 N	122.8 E	12	21	60	10 NM									
WLDT	16	49.4 N	160.1 W	18	29	30	1 NM	85	1003.5		3.9	6	10	34	12	24.5
DSCO	17	41.8 N	179.9 W	00	06	M 25	10 NM	01	1005.0	9.0	9.0	4	16.5	07	6	28
JPLN	17	33.7 N	129.7 W	00	23	M 12			1024.8			3	6.5	29	12	32.5
HOMC	17	38.8 N	158.7 W	06	20	M 50	1 NM		0994.5	16.5	15.0	4	8	27	5	6.5
EWZU	17	38.9 N	140.5 E	12	08	48	5 NM	05	1012.6	8.6		6	13			
3EYN	17	43.6 N	156.4 W	18	05	M 64	50 YD	05	0998.8	8.0		7	6.5	05	9	8
3FYN	18	44.4 N	158.9 W	00	04	M 66	5 NM	03	0992.0	4.0	10.0	10	6.5	04	3	10
ELXT	18	12.7 N	177.9 E	06	05	M 66	10 NM	02	1012.2	25.8		5	5	05	6	10
JPWM	18	30.1 N	155.2 E	06	25	M 43	2 NM	51	1000.5	19.0	17.0	8	24.5	22	9	23
KLMF	18	34.6 N	148.4 E	06	34	45	2 NM	07	1009.8	9.4	15.6	7	16.5	34	10	24.5
KOCZ	18	39.1 N	149.3 W	18	23	M 33	10 NM	02	1003.1	12.0	11.0	7	29.5			
D7GE	19	38.1 N	164.7 W	00	06	M 17	10 NM	01	1016.0	11.9	14.0	8	14.5	06	9	28
HPDE	19	29.1 N	157.4 E	00	31	M 47	10 NM	03	1014.5	19.0	18.0	9	26	30	11	23
JEYJ	19	28.5 N	153.2 E	00	34	M 27	10 NM	01	1019.0	15.0	17.5	5	8	34	8	26
JWFS	19	38.0 N	161.9 E	00	10	M 50	.5 NM	63	0975.5	12.5						
KMJR	19	52.5 N	133.0 W	00	27	M 40	10 NM	01	0992.3	5.6	6.7	4	10	18	8	24.5
ONLA	19	33.7 N	170.6 E	00	16	M 45	5 NM		1000.5	16.0		6	19.5	16	8	29.5
WNDF	19	50.4 N	129.3 W	00	24	M 14	5 NM	16	1000.1	7.8	7.6	3	10	24	14	24.5
JWWH	19	31.8 N	155.9 E	04	32	48	10 NM	01	1015.5	12.5	16.0	9	19.5	32	9	16.5
JCOF	19	29.8 N	156.2 E	06	34	45	5 NM		1015.5	14.0	18.5	6	23	31	10	29.5
C7DG	19	32.2 N	149.3 W	09	16	50	.5 NM	65	1007.0	18.2	14.0	6	14.5			
JRMO	19	31.8 N	160.0 E	12	30	M 43			1010.0	11.5	16.0	8	10	30	8	26
KWGF	19	39.7 N	171.9 E	12	13	M 48	.5 NM	91	0995.3	7.4	10.3	8	19.5	13	11	16.5
D7MK	19	28.8 N	159.3 W	18	36	M 10	> 25 NM	00	1020.0	19.0	19.0	6	10	36	7	29.5
EWGF	19	40.1 N	172.2 E	18	12	M 48	.5 NM		0994.7	10.4						
JPLN	19	33.7 N	145.6 W	18	25	M 56	5 NM	01	1008.0	15.0	19.0	8	13	25	8	13
3FHK	20	33.6 N	160.8 E	00	33	M 35	5 NM	02	1013.5	12.3	17.0	8	36	31	9	39
6KVA	20	45.8 N	134.6 W	00	35	M 12	10 NM	02	1012.0	7.5	9.5	5	8	29	14	24.5
ATPN	20	34.7 N	166.0 E	00	32	M 50	5 NM	25	0997.4	12.0						
DFEA	20	26.8 N	166.9 E	00	30	M 30	10 NM	24	1012.2	18.8	19.4			30	12	29.5
JBMO	20	31.9 N	159.3 E	00	32	M 34	5 NM	71	1017.5	14.0	16.0	8	13	31	8	26
JGXU	20	42.1 N	172.9 E	00	09	M 60	.5 NM	65	0994.0	8.0	6.0	8	13	09	10	39
JCOF	20	30.7 N	153.5 E	00	35	17	10 NM		1023.5	12.5	17.5	5	8	34	12	26

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
PACIFIC	FEB.															
JGAD	21	54.2 N	152.2 W	00	30	M 48	5 NM	02	1012.0	- 3.0	2.0	8	19.5	30	8	19.5
JGXU	21	42.6 N	174.3 E	00	20	M 08	200 YD	45	0988.0	11.5	8.0	6	6.5	11	13	26
WCIP	21	49.0 N	170.0 E	06	36	21	10 NM	03	1000.1	2.0	0.0	5	6.5	11	12	29.5
WHON	21	58.5 N	150.3 W	06	32	70	10 NM	07	1005.0	- 5.0		5	11.5	32	10	24.5
D7UT	21	51.3 N	174.9 W	17	11	M 49	5 NM	83	1005.0	5.0	0.4	8	16.5	11	8	16.5
ELHW	21	47.9 N	145.9 W	18	29	M 33	5 NM	07	1026.0	4.0	5.0	5	18	29	9	32.5
JAUD	21	46.6 N	144.0 W	18	30	M 30	10 NM	02	1026.0	3.0	9.0	7	13	29	12	24.5
JHLB	21	51.3 N	172.1 E	18	05	M 35	5 NM	02	0995.0	3.0	3.0	7	13	14	7	24.5
JLPY	21	33.9 N	148.3 W	18	07	19	10 NM		1034.6	12.6	15.8	5	1.5	02	10	49
ABDD	22	51.6 N	179.5 E	00	14	M 25	.5 NM		0993.0	7.0	4.0	4	6.5	16	14	24.5
JAUD	22	47.1 N	145.4 W	00	30	30	10 NM		1028.0	5.0	8.0	8	13	30	12	24.5
ELHW	22	48.9 N	150.9 W	06	30	M 28	5 NM	03	1031.0	6.0	6.0	4	14.5	29	6	26
KADB	22	53.4 N	150.0 W	06	33	20	5 NM		1024.8	- 3.0	2.2	4	16.5	35	8	26
ABUA	23	34.9 N	155.5 E	00	31	M 50	10 NM	02	0998.0	10.0	16.0	5	13	31	5	13
DOPN	23	29.8 N	154.4 E	00	30	M 45	10 NM	15	1007.5	14.5	18.0	7	10	30	6	36
JHJE	23	36.3 N	174.3 W	00	20	21	10 NM	7	1020.0	17.0	15.5	6	24.5	13	7	8
UVGP	23	41.8 N	143.6 E	00	20	60										
WLDT	23	53.1 N	137.4 W	00	27	38	5 NM	26	1007.6	1.1	6.2	6	14.5	29	12	26
5MKV	23	27.5 N	161.5 E	06	30	35	10 NM	07	1005.2	20.0	20.0	10	18	31	14	29.5
JJFS	23	30.2 N	160.1 E	06	30	M 45	5 NM	15	1002.6	13.5	18.0	8	11.5	28	11	26
UVDV	23	45.0 N	147.8 E	12	07	M 62	5 NM	22	1010.4	- 5.1	2.1	4	6.5			
WYBI	23	35.0 N	162.7 E	12	32	44	10 NM	27	0997.5	8.9	15.6	XX	24.5	32	7	24.5
ABDD	24	51.1 N	162.4 E	00	04	M 51	.25 NM	86	0984.0	2.0	4.0	5	11.5	05	12	19.5
ELAC5	24	53.2 N	173.3 E	00	08	M 50	5 NM	44	1003.5	3.0						
H3AG	24	41.8 N	169.7 E	00	23	M 60	2 NM	05	0985.0	9.0	10.0	8	13	23	12	26
WPTO	24	47.9 N	124.8 W	00	16	32	10 NM	07	1019.0	4.4	8.9	2	6.5	15	6	26
WYBI	24	34.9 N	166.5 E	00	27	28	10 NM	02	1006.8	10.0	12.2	4	16.5	32	7	24.5
ONNE	24	35.5 N	171.5 E	06	26	M 30	10 NM	15	1007.7	12.0	15.5	8	16.5	28	12	32.5
JIFS	24	44.6 N	160.1 E	09	31	M 48			0995.5	0.0	2.0	6	11.5	02	7	13
ESLB	24	54.5 N	162.0 E	12	36	M 52	.25 NM	73	0981.5	- 1.8	0.5	11	16.5			
EUPF	24	50.2 N	156.5 E	12	34	72	10 NM			- 3.2	0.5	8	19.5			
JIYY	24	46.9 N	160.0 E	12	30	M 49	.5 NM	65	0980.6	3.0	1.0	8	19.5			
UIAP	24	49.4 N	155.5 E	12	10	72			0991.8		1.2	5	11.5			
EUEZ	24	50.4 N	159.7 E	18	10	54		03	0982.5		1.0	6	11.5			
DGER	25	32.7 N	142.7 E	00	36	M 52	5 NM	80	1002.2	12.3	17.0	8	26	01	9	32.5
HPDE	25	34.8 N	147.1 E	00	02	M 62			0989.0	9.5	17.0	8	29.5	02	12	26
JJFS	25	32.6 N	148.2 E	00	24	58	2 NM		0985.3	16.0	17.0	8	11.5	18	7	26
JHLK	25	33.1 N	140.9 E	00	03	M 41	.5 NM	63	1006.5	19.0	27.0	11	26	02	11	26
ONNE	25	36.3 N	168.3 E	00	28	M 14	10 NM	02	1021.4	10.5	12.6	4	5	29	12	29.5
VCOD	25	50.8 N	127.5 W	00	10	M 50	5 NM		1006.7	3.1	5.8					
JGAD	25	53.2 N	174.9 E	06	17	M 38	10 NM	02	1006.0	4.0	3.5	8	13	18	11	26
WWPI	25	52.8 N	171.1 E	06	20	51	10 NM	50	0998.0		2.8	6	8	19	9	23
5MPO	25	39.6 N	137.1 W	12	33	M 50	5 NM	13	1008.5	19.0	17.0	3	8	35	6	10
JFOT	25	36.2 N	159.3 E	12	15	M 48			0988.5	14.0	12.0	6	23	16	8	26
JCXW	25	35.3 N	161.2 E	12	17	51	1 NM	61	0996.9	14.0	19.0					
6MWS	26	44.6 N	155.7 E	00	35	M 50	2 NM	75	0983.0	- 1.0	2.0	5	8	03	13	14.5
H3NP	26	41.6 N	167.5 E	00	13	M 48	.5 NM	53	1001.0	10.0	9.0	5	19.5	13	6	31
JEYJ	26	33.8 N	165.5 E	00	17	M 49	1 NM	07	1002.0	16.5	13.5	6	11.5	17	8	23
JFOT	26	36.7 N	161.7 E	00	25	M 45	10 NM	01	1003.5	11.0	13.5	8	23	21	9	26
JHLK	26	30.6 N	148.5 E	00	35	M 15	2 NM	21	1014.5	10.5	19.0	3	8	35	12	26
JLGT	26	43.7 N	165.1 E	00	14	M 49	200 YD	53	0991.5	9.0	9.0	4	16.5	16	7	16.5
JPND	26	39.2 N	164.2 E	00	20	M 20	1 NM	40	1010.0	11.5	7.0	8	14.5	20	10	29.5
ONNE	26	37.3 N	163.0 E	00	25	M 37	10 NM	01	1002.0	12.8	13.5	6	16.5	20	12	32.5
JHJD	26	26.0 N	136.5 E	03	01	M 15	10 NM	03	1023.0	17.5	23.5	3	6.5	01	8	24.5
C6HD	26	26.9 N	155.6 W	06	06	30	5 NM		1015.5	19.0	20.8	90	36			
JIOW	26	51.0 N	167.5 E	06	11	M 52	2 NM	70	1004.5	1.0	3.5	6	10	12	8	18
JGAD	26	52.1 N	167.2 W	09	12	M 52	.5 NM	63	1002.5	1.0	1.5	7	11.5			
JFDP	26	51.8 N	131.6 W	12	19	M 50	> 25 NM	01	0994.0	6.4	8.9					
UEKY	26	51.1 N	158.1 E	12	03	M 47	200 YD	75	0972.7	- 0.9	0.6	11	28			
ELAC5	26	49.0 N	156.3 E	18	29	M 50	50 YD		0973.5	- 2.5						
WGKF	26	51.9 N	165.1 E	18	14	M 38	5 NM	15	0992.1	2.8	2.0	XX	10	17	XX	26
4XIL	27	48.5 N	156.4 E	00	26	M 59	1 NM	70	0990.6	- 5.4	3.0	12	26			
JIOW	27	50.2 N	161.1 E	03	21	M 55	.25 NM	75	0979.7	- 1.5	2.0	6	13	21	10	29.5
JJBU	27	50.9 N	164.0 E	06	20	M 54	.5 NM	77	0998.0	- 0.5		7	11.5	21	7	29.5
S27063	27	46.0 N	160.2 E	06	02	M 71		01	1009.6							
WGKF	27	51.3 N	162.0 E	06	21	M 60	1 NM	07	0985.7		1.0	XX	16.5	21	XX	39
WLDT	27	52.3 N	165.3 E	06	18	70	5 NM	26	0994.3	- 1.1	1.7	10	26	19	12	36
WSDX	27	59.4 N	145.5 W	06	05	M 25	10 NM	02	1011.1	0.0	5.6	3	16.5	08	6	24.5
BRVA	28	52.3 N	169.8 E	00	16	M 30	5 NM	03	1013.0	3.0	3.5	5	13	23	10	32.5
WSDX	28	54.2 N	139.0 W	06	02	M 30	10 NM	03	1003.0	2.8	7.2	3	6.5	09	8	24.5
	MAR.															
JPEP	1	31.6 N	142.8 E	00	20	M 50	5 NM	61	1010.5	18.5	19.0	5	6.5	21	6	11.5
WNDD	1	54.3 N	138.9 W	00	08	M 48	2 NM	26	0996.0	2.2	4.4	5	8	09	6	13
KHJB	1	55.4 N	139.6 W	06	07	M 40	5 NM		0997.5	2.2	4.4	3	10	07	9	26
WSDX	1	50.0 N	134.4 W	06	10	M 60	5 NM	02	0997.3	9.0	10.0	6	19.5	10	6	19.5
WSIN	1	50.9 N	141.7 W	12	02	50	5 NM		0974.9	5.0	3.3	2	16.5	05	13	49
JCVS	1	46.4 N	143.1 W	18	32	M 48	2 NM	61	0981.2	6.0	7.0	8	13	30	10	19.5
JDUL	1	44.3 N	145.5 W	18	29	M 41	10 NM	15	0995.3	8.0	8.8	10	14.5	30	13	34.5
KACK	1	41.4 N	125.2 W	18	20	M 25	5 NM	01	1007.5	9.0	10.5	7	16.5	18	9	29.5
KHBA	1	44.2 N	129.0 W	18	22	35	5 NM	01	0999.6	9.0	11.2	XX	10	22	10	24.5
WPTO	1	46.8 N	126.1 W	18	18	M 54	10 NM	01	0998.6	11.2	8.1	3	8	18	0	19.5

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
PACIFIC	MAR.															
JDUL	2	44.2 N	145.9 W	00	29	M 38	2 NM	82	1001.0	9.0	8.5	9	16.5	32	12	26
5MUU	2	35.4 N	130.0 W	03	23	M 48	10 NM	02	1015.0	16.0	15.0	4	10	27	8	19.5
H8GQ	2	54.1 N	159.9 W	05	28	M 50	10 NM	03	1001.1	1.0	0.2					
KJDG	2	43.6 N	128.5 W	06	20	25	10 NM	01	1000.8	7.8	6.1	6	14.5	24	10	26
WSDX	2	47.5 N	131.6 W	06	18	M 55	5 NM	50	0985.0	8.0	8.9	6	24.5	18	6	26
JJKO	2	43.1 N	151.3 E	09	01	M 48	200 YD	73	0981.7	0.0	5.0	6	11.5	09	7	16.5
8KVA	2	45.8 N	153.7 E	12	02	M 38	200 YD	73	0986.0	- 2.5	1.5	6	13	02	9	24.5
JKLA	2	49.1 N	133.0 W	12	14	M 25	5 NM	02	0975.3	8.0	7.0	6	23	14	9	29.5
UIFG	2	48.5 N	154.1 E	12	04	48	10 NM		0998.9	- 4.2	1.0	6	6.5			
3FLC	3	43.6 N	160.3 E	00	15	M 58	.25 NM	40	0980.0							
8KVA	3	44.1 N	151.1 E	00	32	M 22	5 NM	01	1001.5	- 2.0	1.5	6	14.5	34	10	32.5
GUNZ	3	39.7 N	130.5 W	00	28	M 24	1 NM	16	1013.9	10.6	11.2	4	8	28	12	26
JBWM	3	34.3 N	167.9 E	00	21	M 34	5 NM	02	1012.6	17.5		8	29.5			
JFOT	3	43.3 N	165.0 W	00	30	M 53	1 NM	50	1002.0	5.0						
WNPD	3	47.9 N	171.5 E	00	15	45	2 NM	62	0995.5	6.5	4.4	8	16.5	16	11	24.5
WSDX	3	44.9 N	128.9 W	00	25	M 44	5 NM	16	1000.8	8.0	8.9	6	23	27	10	26
VPFG	3	42.9 N	164.6 W	06	30	M 44	2 NM	63	1001.5	6.2	9.0	4	6.5	29	9	29.5
JFQD	3	49.3 N	159.0 E	12	35	M 38	1 NM	71	0985.0	1.0	2.5	6	10	04	11	24.5
JEWP	3	24.4 N	123.4 W	18	34	M 15	10 NM	15	1022.5	13.5	14.0	3	5	29	10	29.5
8KVA	4	40.6 N	145.7 E	00	28	M 20	10 NM	02	1019.0	3.0	3.0	6	14.5	28	9	24.5
H9II	4	53.5 N	177.5 E	00	20	M 32	1 NM		0989.9	- 6.0		7	23	20	7	28
HOMQ	4	49.7 N	176.6 E	03	22	31	5 NM		1000.0	6.0	3.0	4	6.5	22	10	26
JIRP	4	51.6 N	167.0 E	03	26	M 22	1 NM	52	0980.0	3.5	3.0	6	6.5	20	13	32.5
5LFX	5	53.7 N	178.5 W	00	10	M 40	200 YD	55	0972.5	3.0	5.0	10	29.5	10	10	32.5
ELCJ	5	54.1 N	174.0 W	00	09	M 65	.25 NM	07	0984.3	10.0	5.0	1	13	12	4	13
JMSI	5	53.9 N	175.9 W	00	11	52	200 YD		0979.0	3.0	5.5	6	13	11	6	16.5
JRFN	5	52.2 N	171.2 W	00	11	50	2 NM	51		4.0						
JIRP	5	48.5 N	159.5 E	06	29	M 38	5 NM	70	0998.8	- 2.0	2.5	9	24.5	27	12	19.5
JBUM	5	51.3 N	176.1 W	09	22	M 43	.5 NM		0982.0	3.0	4.5	8	16.5	21	10	26
WHON	5	54.3 N	164.6 W	12	10	50			1013.9	3.7	4.7	4	6.5			
H8GQ	5	52.6 N	170.4 E	23	27	M 40	5 NM	60	0998.4	1.0	0.2	15	24.5	27	14	24.5
JEUS	6	52.3 N	169.5 E	00	27	M 48	10 NM		0989.0	0.0	3.0	7	13	28	8	19.5
JHJF	6	53.6 N	177.1 E	00	25	M 33	1 NM	60	0975.4	2.0	3.3	7	18	23	10	24.5
OULU	6	54.2 N	177.7 W	00	23	46	5 NM	02	0979.6	5.6	0.0	9	6.5	24	12	24.5
5MUU	6	34.4 N	150.5 W	03	35	M 58	5 NM	25	1013.0	12.5	15.5	4	10	33	8	13
JPZD	6	52.7 N	175.0 E	12	25	M 35	2 NM	15	0992.5	2.5	5.0	8	29.5	26	10	19.5
JREF	6	53.7 N	178.6 W	12	23	M 49			0992.0	2.5	5.0	7	13	23	12	28
H8GQ	6	50.7 N	165.0 E	23	25	M 40	5 NM	05	0998.0	0.0	- 0.1	15	24.5	27	14	24.5
HOVS	7	44.1 N	154.2 E	00	27	M 55	.5 NM	81	0998.0		0.0	9	28	26	9	24.5
ULEX	7	47.0 N	152.2 E	00	24	M 54	1 NM	77	0981.1	- 4.6	3.1	6	13			
WVFZ	7	38.8 N	163.3 E	00	27	48	2 NM	65	1006.0	13.3	12.8	5	8	23	14	19.5
SLJT	7	45.0 N	154.0 E	06	24	M 45	1 NM	84	0994.0		- 1.0	6	29.5			
H9II	7	46.0 N	156.5 E	06	26	M 48	2 NM	85	0986.7	2.0	0.0	8	19.5	26	9	24.5
JCLL	7	46.8 N	157.9 E	06	25	M 55	1 NM	74	0984.0	- 1.8		7	16.5	25	11	32.5
JMJM	7	48.0 N	156.0 E	06	27	M 42	.5 NM	16	0974.0	- 1.0	0.8	5	11.5	23	10	36
WTST	7	46.4 N	152.2 E	06	27	M 50	2 NM	72	0990.8	- 5.5	2.2	12	24.5			
ZCSX	7	39.4 N	145.3 E	06	27	M 26	5 NM	02	1009.4	- 1.5	1.7	6	13	27	11	26
HOMO	7	47.9 N	155.5 E	09	28	M 49	200 YD	72	0984.0	0.0	1.0	6	14.5	22	8	11.5
JPZD	7	49.0 N	166.5 E	12	23	M 45	1 NM	72	0990.0	- 1.5	1.5	9	32.5	22	8	19.5
KJGF	7	53.7 N	179.0 W	18	21	M 40	5 NM	51	0990.0	4.5	3.0	8	19.5	23	10	29.5
ELCJ	8	52.2 N	169.0 E	00	23	M 48	2 NM	87	0985.2	- 0.3	3.6	7	23	24	7	23
JEUS	8	49.4 N	159.4 E	00	26	M 50	5 NM	85	0990.0	- 3.0	1.0	7	16.5	26	8	23
JMLP	8	54.0 N	179.3 W	00	22	M 45	5 NM	01	0997.0	3.0	2.3	9	29.5	25	10	13
JREF	8	52.1 N	168.3 E	00	22	M 49	5 NM	83	0983.5	2.0	4.0	6	14.5	21	9	29.5
H8GQ	8	49.0 N	160.5 E	05	23	M 55	2 NM	57	0999.7	- 3.0	- 0.3					
JFZG	8	49.0 N	166.7 E	06	24	M 40	5 NM	26	0997.0	- 1.0		8	13	25	14	29.5
OULU	8	49.5 N	162.1 E	06	26	50	10 NM	15	0995.5	2.0	- 2.0	10	10	23	12	23
UNUV	8	49.1 N	161.7 E	06	25	M 72	2 NM	74	0995.1	- 3.4	2.0	12	24.5	27	15	23
JHJF	8	51.2 N	164.5 E	09	25	M 30	1 NM	72	0990.8	- 2.0	1.5	7	16.5	25	10	28
BPRR	8	34.0 N	129.8 E	12	01	58										
WFQE	8	13.1 N	95.7 W	12	02	M 52	10 NM	02	1010.2	22.8	28.9	6	10	02	6	11.5
JKZL	9	53.0 N	172.1 E	00	25	M 40	1 NM	74	0995.0	0.0	5.0	8	14.5	24	10	34.5
JMLP	9	53.4 N	175.1 E	00	25	M 40	10 NM	26	0996.1	2.0	2.4	12	26	24	12	26
KJGF	9	52.6 N	169.4 E	00	25	M 54	5 NM	26	0995.7		3.0	8	34.5	25	10	26
JBKR	9	53.1 N	171.9 E	03	25	M 50	.5 NM	72	0997.5	1.0	7.0	6	10	25	10	26
JKFS	9	52.9 N	174.3 E	03	24	M 54	10 NM	22	0998.0	0.5	4.0	3	6.5	25	8	19.5
JREF	9	49.0 N	164.8 E	03	22	M 40	1 NM	70	1009.5	0.0	2.0	6	11.5	25	8	24.5
JLNX	9	54.1 N	167.0 W	06	27	34			0998.6	5.5	3.5	8	13	25	9	29.5
5MUU	10	34.1 N	162.7 W	00	09	M 07	10 NM	01	1033.0	10.0	16.3	1	1.5	09	0	49
BPJH	10	37.0 N	122.7 E	00	12	78	5 NM		1015.4	5.4						
JHJE	10	53.3 N	177.9 E	00	24	M 36	2 NM	70	1016.0	3.0	3.5	4	10	23	11	24.5
JKBI	10	53.8 N	173.1 W	00	25	M 39	5 NM	01	1019.2	5.5	4.0	10	26	27	10	28
JLNX	10	53.3 N	170.9 W	00	24	M 44	10 NM	01	1021.5	4.0	3.5	8	13	26	8	29.5
OVPH	10	54.6 N	170.5 W	00	25	M 40	5 NM	86	1017.0	3.0		8	32.5			
H9XW	10	48.9 N	177.1 E	06	14	M 50	10 NM	02	1013.5	3.8	3.0	2	8	14	5	8
9VYT	10	45.7 N	173.9 E	12	25	M 55			1003.4	2.5		4	6.5	26	10	19.5
DVEL	10	41.5 N	178.2 E	12	11	M 15	1 NM	22	1010.1	11.0	0.1	7	10	15	14	28
H9EV	10	48.6 N	174.2 W	12	22	52	50 YD	60	1005.0							
WJGO	10	58.8 N	150.2 W	12	28	M 50	5 NM	02	0997.5	1.1	5.6	6	26	27	9	29.5
6ZSY	11	54.3 N	168.1 W	00	24	M 32	1 NM	05	0991.5	7.0	6.5	7	23	25	7	26
GUNZ	11	46.4 N	178.8 E	00	29	M 41	10 NM	01	1020.7	5.4	6.5	6	26	27	14	24.5

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
PACIFIC	MAR.															
H9EV	11	49.5 N	169.3 W	06	21	52			1004.0							
JLNX	11	53.2 N	179.3 W	06	27	M 41	2 NM	70	1012.0	7.0	3.0	7	10	27	7	24.5
JKFS	11	46.6 N	155.7 E	09	25	M 52	5 NM	01	1005.5	0.0	1.5	9	6.5	22	7	19.5
JMSI	11	47.4 N	154.2 E	12	25	M 55	1 NM	70	1001.5	- 1.5	3.0	9	24.5	25	10	28
KGJB	11	49.6 N	169.0 W	12	27	M 45	10 NM	01	1001.6	3.5	5.0	8	26	25	7	29.5
S1112Q	11	06.9 N	130.2 E	12	02	65			1010.0		28.0			08	8	5
D5AG	11	50.0 N	159.1 W	18	27	M 52	2 NM	50	1007.8	4.0	5.2					
EKLW	11	48.2 N	154.2 E	18	27	M 48			1001.9	- 3.5	2.2	6	16.5			
KRDH	11	54.1 N	167.7 E	18	32	44	5 NM	85	1004.5	1.1	4.4	5	10	32	7	24.5
SLJQ	12	51.7 N	166.0 W	00	29	M 50	5 NM	23	1018.0	2.5	3.0	2	6.5	29	8	26
JKQH	12	51.2 N	163.0 E	00	22	M 50	.5 NM	40	0995.5	2.0	1.0	6	23	23	6	19.5
KRDH	12	54.0 N	169.0 E	00	30	45	5 NM	86	1014.2	2.2	4.4	5	10	32	6	29.5
UTIX	12	50.5 N	156.3 E	00	27	M 50	5 NM	70	0995.4	- 0.3		3	3			
WNDF	12	50.4 N	129.0 W	00	22	M 12	2 NM	87	1008.9	3.8	7.7	2	3	30	10	24.5
JBKP	12	48.5 N	157.6 E	03	26	M 66	2 NM	70	1009.7	- 1.0	6.5	6	13	25	9	26
JHJF	12	48.0 N	158.2 E	03	27	M 42	.5 NM	70	1010.5	- 1.0	1.5	5	8	27	10	26
JLNX	12	51.7 N	172.7 E	06	22	M 28	.25 NM	71	1010.5	1.5	2.0	7	13	20	9	24.5
KGJP	12	49.5 N	159.2 E	06	29	M 44	5 NM	27	1019.0	4.0	5.0	6	24.5	30	9	24.5
A8IB	12	46.4 N	178.2 W	18	14	M 52			0991.5	5.0	6.0					
JOXW	12	52.1 N	151.5 W	18	05	M 37	1 NM	07	1007.3	2.5	5.0	6	11.5	31	12	32.5
HPVK	12	47.9 N	138.6 W	23	27	M 33	2 NM	29	1000.7	7.0		10	16.5	27	13	32.5
A8IB	13	46.9 N	178.0 W	00	24	M 50			0994.0	4.0	6.0					
EUDT	13	47.1 N	152.3 E	00	10	52			1020.6		1.2			16	12	6.5
JJNY	13	53.3 N	150.0 W	00	32	M 42	5 NM	51	1007.0	7.5	7.0	8	13	32	9	26
JOXW	13	51.4 N	153.1 W	00	31	M 40	2 NM	08	1016.9	2.5	5.0	6	11.5	30	12	32.5
DZUY	13	45.3 N	172.4 E	05	28	M 30	10 NM	02	1014.5	4.0	0.6	12	5	28	11	37.5
D5MS	13	50.9 N	166.5 W	06	15	M 50	2 NM	06	1018.2	8.0	7.0	5	10	15	9	10
GYLF	13	53.7 N	176.6 W	06	12	M 25	1 NM	43		2.8	3.5	6	10	12	8	24.5
JIYY	13	47.1 N	178.7 W	06	27	48	1 NM		1003.0	4.5	4.0					
UNBW	13	34.0 N	143.3 F	06	36	50	10 NM	02	1009.3	15.0						
VRGF	13	53.3 N	149.9 W	06	32	M 50	2 NM	16	1010.3	0.5	1.0	15	26	32	15	26
ZCUV	13	49.2 N	178.0 W	06	29	M 55	2 NM	89	0993.0							
JLNX	13	49.7 N	167.3 E	12	27	M 34			1010.2	- 1.4	3.0	8	16.5	30	10	31
OVEL	13	42.8 N	151.7 W	18	09	M 60	5 NM	02	1010.3	9.0	0.1	5	10	23	5	10
HPVK	13	47.2 N	142.9 W	23	30	M 30			1022.0	7.0		10	16.5	31	13	32.5
5LLP	14	50.4 N	171.4 W	00	25	M 48	.5 NM	04	0999.8	2.0	0.2	6	13	25	7	26
5MUU	14	33.3 N	163.4 E	00	15	M 47	.5 NM	63	1004.5	18.5	17.0	5	19.5	16	9	26
GYLF	14	53.5 N	179.0 E	00	29	M 48	2 NM		0986.6	2.0						
JBMS	14	52.6 N	138.7 W	00	31	M 35	1 NM	84	1005.5	3.0	7.0	7	16.5	30	12	26
JOWT	14	49.4 N	177.8 F	00	25	M 56	5 NM	02	1011.0	2.5	3.5	4	6.5	26	8	19.5
5LJO	14	51.0 N	176.8 W	06	26	M 50	5 NM	02	1004.0	4.0	3.0	7	6.5	27	11	19.5
ELOC	14	41.7 N	158.2 E	06	34	M 60			1000.2	4.0	7.0	7	13	34	9	13
H9II	14	41.5 N	155.7 E	06	34	M 40		01	1009.2	2.5	4.0	9	24.5	35	8	24.5
JNJL	14	52.2 N	175.7 E	06	30	M 48	10 NM	02	1005.5	5.5	4.0	6	8	30	5	11.5
JPLN	14	39.8 N	165.7 E	12	28	M 50	2 NM	60	0986.0	7.0	11.0	7	14.5	27	9	16.5
JRYP	14	28.7 N	136.7 W	12	35	21	10 NM		1024.5	14.5	21.0	7	8	33	12	32.5
WEZD	14	37.6 N	135.7 W	12	35	M 40	10 NM	02	1021.5	6.1	13.3	8	32.5	33	12	19.5
WEZM	14	42.9 N	170.5 E	12	15	M 56	5 NM	60	0982.3	9.4	3.9	10	31			
JABN	14	42.3 N	135.9 W	18	33	M 18	10 NM	02	1024.0	7.5	9.8	3	5	31	8	24.5
WLDT	14	48.3 N	172.9 E	18	09	50	1 NM	64	0982.0	3.9	2.2	5	10	09	5	11.5
5MUU	15	34.5 N	150.1 E	00	30	M 35			1024.5	10.5	17.0	5	19.5	31	9	26
A8YI	15	41.8 N	165.0 E	00	29	M 50			1000.0	1.0	5.0	5	6.5	32	10	16.5
JAHY	15	32.1 N	165.7 E	00	34	M 17	5 NM	02	1020.8	16.0	18.0	8	14.5	32	9	26
JLNX	15	45.6 N	157.2 E	00	30	M 36	.5 NM	26	1010.8	- 3.0	1.0	6	13	32	8	29.5
JMDK	15	40.8 N	174.1 E	00	27	M 40	2 NM	25	0998.5	7.5	11.0	9	19.5	22	9	26
KRDH	15	47.2 N	157.3 E	00	32	40	2 NM	85	1007.3	- 2.2	2.2	6	11.5	32	9	28
WEZM	15	42.6 N	173.3 E	00	26	M 40	5 NM	21	0987.5	6.7	5.0	8	19.5	18	12	39
WLDT	15	48.9 N	175.6 E	00	12	60			0996.0	4.0	2.5	5	13	13	5	14.5
JPLN	15	39.6 N	169.1 E	03	29	M 51	.25 NM	27	1004.6	4.5	10.5	9	19.5	27	12	19.5
D5ZP	15	38.3 N	168.2 E	06	32	M 55			1011.0		11.5	12	16.5	30	13	42.5
ELUD	15	38.5 N	166.4 E	06	31	48	5 NM	02	1012.0							
GYLF	15	52.9 N	171.5 E	06	06	M 52	200 YD	75	0977.9	0.5	2.0	7	24.5	06	7	24.5
H9II	15	42.9 N	161.6 E	06	31	M 47	2 NM	10	1008.3	0.0	3.0	9	16.5	29	15	28
HPWV	15	41.9 N	174.9 E	06	27	M 40	10 NM	60	0996.5	4.5		6	29.5	26	8	29.5
ZCSN	15	50.1 N	162.5 E	06	33	M 53	.5 NM		0990.3	- 0.5	2.0	6	11.5	32	10	24.5
JOOF	15	40.0 N	162.4 E	12	31	52	5 NM		1019.5	2.0	6.0	8	19.5	33	11	23
OXDW	15	39.6 N	173.7 E	12	28	35	10 NM	26	1002.3	5.4		8	26			
WHDN	15	59.6 N	141.0 W	12	09	M 68	.5 NM	69	1003.8	0.0						
6ZAS	15	45.0 N	147.3 W	18	30	M 29	10 NM	80	1017.5	5.0	10.0	6	13	29	10	26
GBQV	15	55.3 N	175.2 W	18	11	M 45	1 NM	07	0988.1	3.5		9	26	12	7	32.5
A8GI	15	36.7 N	170.9 E	23	29	M 47	10 NM	03	1020.0	11.1	15.4	4	8	29	7	24.5
HPVK	15	43.7 N	149.9 W	23	30	M 30			1025.0	10.0		10	16.5	30	13	32.5
3FWK	16	43.5 N	179.1 W	00	25	M 34	2 NM	76	0997.0	8.9	11.0	12	26	23	14	29.5
6ZAS	16	44.6 N	148.1 W	00	31	M 24	10 NM	80	1020.8	6.0	16.0	5	10	29	12	29.5
D5ZP	16	37.2 N	172.9 F	00	31	M 38	5 NM	01	1019.0	10.0	13.5	10	24.5	30	10	24.5
ELOC	16	38.8 N	168.6 F	00	28	M 37	5 NM	27	1021.0	6.0	12.0	8	21	29	10	28
GYLF	16	51.2 N	166.9 E	00	34	M 50	1 NM	72	0982.4	1.0	2.6	8	19.5	33	9	23
H9ZO	16	40.5 N	164.8 E	00	29	M 35	10 NM	03	1021.5	6.0	6.0	9	26	32	9	24.5
JPLN	16	38.5 N	174.8 E	00	29	M 50	.5 NM	27	1040.0	5.0	13.0	8	16.5	28	12	19.5
JOXW	16	53.2 N	175.0 E	00	07	M 25	5 NM	60	0969.5	5.0	4.5	5	6.5	19	12	32.5

Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C. Air	Temperature °C. Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.*	Swell Waves Height ft.
PACIFIC	MAR.															
OXFU	16	40.9 N	164.5 E	00	29	42	> 25 NM	02	1022.0	6.8	10.0	10	29.5	31	11	28
GBQV	16	56.1 N	179.5 W	06	12	M 23			0981.0	2.5		5	16.5	18	7	24.5
H9II	16	42.9 N	169.2 F	06	30	M 39			1011.9	2.5	3.0	8	23	30	10	26
JEHH	16	49.8 N	168.9 E	06	29	M 48			0991.7	1.5	2.0					
KPDH	16	40.1 N	146.6 E	06	25	C8	5 NM	01	1003.9	7.8	6.7	5	6.5	20	6	24.5
OVPH	16	46.2 N	154.5 E	06	11	M 48	.25 NM	26	0998.2	1.0	0.0	9	23			
PJUO	16	29.2 N	170.6 E	06	03	20	10 NM		1026.2	14.9	17.4	2	5	34	10	29.5
WEZM	16	41.0 N	174.8 W	06	24	M 28	10 NM	15	1007.1	8.9	8.9	6	16.5	23	10	24.5
JLNX	16	41.3 N	150.7 E	09	26	M 13	5 NM	01	1002.0	5.0	2.0	4	5	18	9	28
3FWK	17	44.5 N	172.4 W	00	25	M 22	10 NM	76	1007.0	9.0	11.0	12	26	23	14	29.5
H9II	17	44.0 N	175.2 E	00	28	M 26			1010.0	2.0	3.0	7	21	29	14	26
H9ZO	17	41.7 N	171.7 F	00	20	M 34	.5 NM		1013.5	8.0	9.0	9	18	29	12	24.5
HOMO	17	40.0 N	165.5 E	00	19	M 52	1 NM	65	0999.0	11.5	10.0	8	11.5	19	11	14.5
D5JV	17	50.7 N	150.1 W	03	16	M 50			1023.0	5.2	5.0	10	8	16	7	8
OVPH	17	44.1 N	150.8 F	06	28	M 61	10 NM	02	1001.4	- 1.6	0.0	10	39			
OXFU	17	41.2 N	174.2 E	06	19	50	5 NM		1013.0	10.6		6	13	31	10	19.5
WEZD	17	36.6 N	166.5 W	23	28	M 04	> 25 NM	01	1025.2	13.3	12.8	2	1.5	28	14	26
ELOC	18	39.2 N	178.6 W	00	20	M 45	1 NM	53	1007.5	11.5	12.0	9	23	22	12	29.5
VPGF	18	46.8 N	173.0 F	00	24	M 50			0979.6	3.0	2.0	5	13	22	6	29.5
D5JV	18	50.0 N	141.4 W	03	17	M 56			1017.5	7.0	6.0	9	6.5	17	8	10
PCBP	18	31.0 N	164.1 W	06	11	10	10 NM		1024.0	14.8	16.8			31	12	26
UVZF	18	35.3 N	141.0 E	12	03	58	10 NM		1020.0	11.3	18.0	6	6.5			
5MHI	19	37.1 N	154.9 E	00	31	M 30	5 NM	00	1014.5	10.4	14.0	9	11.5	31	9	26
KHRF	19	35.0 N	159.9 E	00	27	M 48	5 NM	25	1003.9	17.1	16.0	7	8	27	6	10
D5DW	19	38.1 N	162.6 E	06	30	M 52	2 NM	16	1003.0	10.0	12.0	20	42.5	30	14	42.5
BPNE	19	38.2 N	121.5 E	12	22	M 64		04		1.0						
KHRH	19	37.7 N	164.5 E	18	15	M 32	10 NM	02	1009.9	6.5	13.0	6	5	15	7	26
D5DW	20	38.0 N	167.5 F	00	30	M 37	5 NM	60	1013.0	7.0	12.0	18	16.5	32	14	42.5
JPZD	20	37.8 N	173.8 E	00	27	M 43	10 NM	02	1006.5	10.5	14.5	6	10	28	12	32.5
KHRH	20	38.0 N	167.2 E	00	30	M 42	10 NM	01	1011.0	11.0	10.0	6	10	30	7	26
ULPI	20	47.1 N	152.2 E	00	22	M 52	1 NM	22	1020.4	- 2.3	1.0	4	3	08	6	3
WGKF	20	43.8 N	179.5 E	00	22	M 55	2 NM	07	0981.3	10.0	7.0	6	13	21	7	19.5
JGAD	20	43.6 N	176.8 W	03	21	48	2 NM		0993.5	9.5	8.0	8	13	20	8	16.5
GYEW	21	36.6 N	175.0 E	00	28	M 30	10 NM	03	1020.5	9.9	13.5	6	13	31	10	36
UHLV	21	36.5 N	141.5 F	00	01	M 78		61	1010.2							
GBQV	21	40.9 N	145.0 F	18	05	M 48	2 NM	75	1007.0	1.5	13.0					
GNEM	21	30.0 N	160.4 W	18	C8	M 22	10 NM	15	1025.2	18.0	17.6	0	36	09	7	6.5
L	21	52.5 N	172.9 W	18	30	M 53	1 NM	58	0999.0	3.0	5.0	5	10	29	5	13
OVIT	21	37.4 N	172.9 W	18	34	C5	2 NM	63	1025.3	12.5		1	1.5	27	13	24.5
HPVK	21	35.1 N	178.4 W	23	27	M 11	5 NM	02	1027.5	16.1		8	19.5	32	13	26
JDZA	22	34.5 N	147.2 E	00	29	M 56	1 NM		0999.0	13.0	20.0	5	10	30	6	21
JDZO	22	35.1 N	147.0 E	00	28	M 76	1 NM	21	0998.5	11.5	17.5	6	10	30	10	26
KGJX	22	35.0 N	143.3 E	00	33	M 53	10 NM	01	1010.0	12.8	18.3	5	6.5	33	11	16.5
VRGF	22	36.6 N	144.2 E	00	33	M 50			1006.6	7.0	5.0	7	19.5	30	8	19.5
WEZD	22	35.3 N	160.5 E	05	14	M 52	5 NM	12	1000.3	13.9	16.1	4	10	14	13	19.5
ELAH3	22	32.5 N	149.5 E	06	29	M 55	5 NM	02	1006.0	15.0	17.0	10	32.5			
ELBF	22	35.4 N	150.3 F	06	27	M 60	1 NM			13.5						
H8DE	22	34.5 N	161.7 F	06	14	M 55			1007.0	15.0	13.5	7	18	14	7	18
JAUD	22	35.5 N	147.2 E	06	29	M 60	1 NM	05	1002.0	10.0	19.0	10	16.5	30	15	36
JCGH	22	33.2 N	151.0 E	06	28	M 62	200 YD	07	1001.5	15.0	16.0	4	13	29	8	9
JGLU	22	35.0 N	164.2 E	06	12	M 51	5 NM	07	1021.5	12.5	15.0	7	11.5	13	7	11.5
JOOF	22	39.3 N	148.3 W	06	06	50	10 NM		1034.0	11.5	11.0	5	8	06	7	11.5
LFEI	22	38.1 N	159.3 E	06	10	60	.5 NM	81	1001.0	10.0	11.0	12	23			
UWMA	22	38.6 N	148.9 E	06	17	M 27	1 NM	60	0989.1	8.5	10.0	8	26	32	0	0
JKXP	22	37.2 N	160.5 F	09	13	M 40	1 NM	62	0997.5	13.0	14.0	8	13	12	12	26
JOOF	23	38.3 N	143.4 W	00	06	56	10 NM		1027.0	12.5	13.0	5	10	08	8	13
JAUD	23	35.4 N	154.0 E	06	30	M 56			1003.0	11.0	16.5	8	13	30	14	29.5
KIBK	23	27.5 N	150.2 E	06	35	M 25	10 NM	02	1019.6	18.3	20.5	7	10	35	8	26
LFEI	23	37.7 N	163.0 F	06	22	40	5 NM	80	0991.5	11.5	11.0	XX	26			
PCPO	23	39.9 N	155.2 F	06	32	36	1 NM		0990.0	8.0	8.0	4	13	02	11	26
JCVS	23	47.0 N	159.5 E	09	08	M 50			1014.3	1.5	1.0					
JDOC	23	34.9 N	157.6 E	09	30	M 49	1 NM	07	1000.0	10.0	12.0	6	13	29	15	36
OYIT	23	35.4 N	165.7 E	18	25	30	5 NM	81	1001.2	13.0		8	16.5	23	11	36
HPWK	23	31.6 N	171.4 E	23	23	M 25			1014.0	18.1		10	23	23	13	26
5MUU	24	38.1 N	145.1 F	00	29	M 08			1007.0	11.0	11.5	2	3	05	9	29.5
DLDE	24	46.7 N	156.5 E	00	04	66	2 NM	74	1001.0	2.0	2.1	12	19.5			
GSES	24	26.0 N	164.3 E	00	36	10	10 NM		1018.4	20.4	21.6	2	1.5	32	11	32.5
JGFM	24	35.2 N	159.7 E	00	28	M 38	10 NM	02	1008.0	12.0	13.4	6	19.5	30	9	32.5
JAUD	24	35.8 N	161.6 E	06	27	38	5 NM		1008.5	14.0	13.0	6	10	30	11	26
JDZW	24	47.6 N	155.6 E	06	06	M 42	200 YD	72	0995.5	0.0	0.5	10	26	12	11	29.5
OYIT	24	34.3 N	163.0 E	06	28	31	5 NM	81	1011.2	16.8	14.0	9	23	29	11	32.5
PCBP	24	31.5 N	157.5 E	06	26	27	> 25 NM		1016.2	16.4	17.9	5	13	34	7	26
UNXG	24	54.3 N	153.1 W	06	30	47	2 NM	07	1006.2	1.0	4.0	11	26	33	9	26
USRN	24	50.8 N	155.4 E	06	09	M 62	.25 NM	75	1000.2	- 2.6	0.1					
JLJL	24	50.8 N	157.1 E	09	06	M 49	5 NM	70	1009.0	0.5	2.0	5	11.5	08	8	14.5
5MZH	24	49.7 N	146.4 W	12	27	50			1008.0	5.0	5.0	5	10	27	5	10
EKLW	24	49.3 N	155.4 E	18	05	M 50	1 NM	71	0994.0	- 0.5	2.5	12	19.5			
WLDT	24	54.8 N	158.5 W	18	32	50	5 NM	22	1018.0	- 6.6	2.8	5	13	32	9	16.5
HPVK	24	31.1 N	166.6 E	23	18	M 15	5 NM	02	1025.0	19.1		8	16.5	32	14	29.5
5MUU	25	40.2 N	151.0 E	00	27	M 28	5 NM	01	1003.0	6.0	8.5	3	6.5	26	8	26

Continued from page 180.

MARCH 1982			% FREQUENCY OF WIND SPEEDS (<4 KTS)								% FREQUENCY OF WIND SPEEDS (4-10 KTS)								% FREQUENCY OF WIND SPEEDS (11-21 KTS)							
BUOY	LAT	LONG	N	NE	E	SE	S	SW	W	NW	N	NE	E	SE	S	SW	W	NW	N	NE	E	SE	S	SW	W	NW
41001	34.7N	072.3W	0.2	0.6	0.4	0.3	0.1	0.1	0.4	0.6	2.3	5.5	3.9	2.7	1.5	3.0	3.1	1.9	11.4	6.0	6.8	10.3	4.2	7.0	3.8	4.8
41002	32.3N	075.3W	0.3	0.3	0.6	0.9	0.9	0.4	0.6	0.9	2.9	2.7	4.6	5.7	3.2	3.9	5.5	2.6	6.7	6.6	9.4	7.8	6.3	5.5	9.6	3.2
41004	32.6N	078.7W	0.1	0.3	0.8	<.05	0.8	0.4	0.4	0.4	5.0	5.5	4.0	3.3	6.3	6.1	7.2	2.8	9.2	13.3	7.6	3.4	1.6	7.9	8.0	2.7
42001	25.9N	089.7W	0.2	0.3	0.5	0.6	0.5	0.2	0.2	0.2	0.7	2.0	11.1	17.7	3.6	0.5	0.1	0.3	5.6	8.2	11.5	23.4	5.1	0.5	0.2	0.4
42002	26.0N	093.5W	0.4	0.4	0.4	0.8	0.2	0.5	0.4	0.1	2.7	2.7	8.0	10.5	4.5	0.5	0.1		6.3	7.1	7.3	39.9	2.7		0.1	0.8
42003	26.0N	086.0W	0.1	0.1		0.1	0.5	0.1		<.05	0.9	6.1	10.0	18.1	5.3	0.7	0.1	0.1	6.8	10.0	12.0	12.3	6.8	1.3	0.6	4.0
42007	30.1N	088.9W		0.4	0.2	2.0	0.9	0.3	0.1	0.3	1.3	2.2	7.1	14.1	14.8	4.6	0.8		3.8	8.5	12.6	7.2	6.9	4.6		1.4
42008	28.7N	095.3W		0.1		0.1		0.1	0.1	<.05	1.5	3.8	8.5	15.3	5.1	0.7	0.4	1.2	5.0	8.7	10.9	22.1	5.5	<.05		0.7
42010	29.7N	093.4W	0.5	1.6	1.7	1.1	1.0	0.5		0.5	3.7	4.5	0.5	9.5	17.6	7.8	1.7	1.1	10.7	5.0	5.2	9.0	6.6	1.5		1.5
42011	29.6N	093.5W		0.9	0.2	0.4		0.5	0.1		1.4	2.8	3.8	18.7	9.1	2.9	0.8	1.8	3.5	9.9	6.0	19.5	6.7	1.1		0.8
44003	40.8N	068.5W	0.5	0.4	0.3	0.2	0.3	0.3	0.4	0.3	4.7	4.0	4.8	5.0	5.7	5.4	5.2	2.4	5.9	2.9	3.0	5.7	5.8	3.5	14.5	13.1
44005	42.7N	068.3W	0.7	1.0	0.6	0.9	0.8	0.6	0.4	0.3	4.4	2.7	3.7	3.7	5.6	3.5	3.0	0.8	3.8	3.7	2.6	5.5	9.2	6.6	6.7	6.2
44006	36.3N	075.4W	0.4	0.2	0.5	<.05	0.2	<.05			3.6	5.2	4.7	1.3	2.2	0.7	1.0	1.0	13.5	17.6	6.9	5.7	15.2	6.3	3.6	4.8
44007	43.5N	070.1W	0.7	0.3	0.6	0.4	2.1	1.8	0.9	0.3	6.4	4.6	4.1	4.3	7.9	5.6	4.5	6.4	4.6	1.6	1.6	2.5	7.1	4.5	13.0	10.4
45007	42.7N	087.1W						1.9	0.9		1.2	2.0		1.5	5.9	12.2	1.6	2.6	16.2	0.1		4.2	20.8	12.1	3.8	10.7
46002	42.5N	130.0W	0.5	0.1	0.5	0.3	0.1	0.5	0.7	1.1	3.6	3.9	1.5	1.1	0.7	2.5	5.6	5.8	9.6	4.8	8.2	2.8	2.0	5.6	14.1	15.4
46003	52.0N	156.0W				0.1		0.1			0.6	0.3	0.8	1.8	1.4	1.7	1.8	0.7	3.2	2.1	3.5	3.7	8.0	10.8	10.5	5.9
46004	51.0N	136.0W	1.0	0.5	0.5	0.3	0.8	0.5	0.9	0.7	4.8	1.4	1.0	3.9	2.8	2.8	2.6	8.0	10.1	3.6	2.4	4.2	5.6	4.9	4.5	14.3
46005	46.0N	131.0W	0.1		0.1		0.5	0.5	0.5	1.0	2.4	0.7	0.5	1.1	0.9	2.8	3.8	3.2	9.5	4.2	4.0	1.8	1.6	7.3	16.6	17.9
46006	40.7N	137.7W		0.1			0.1	<.05	0.1	<.05	3.1	0.7	0.1	0.2	1.5	0.5	2.0	1.9	2.3	7.3	1.0	4.5	2.2	0.1	6.4	7.0
46010	46.2N	124.2W	1.7	1.7			0.7	0.7	0.7	0.7	4.7	4.0	2.4				8.7	8.7	2.4	1.7	2.8	7.8	19.3	9.2	4.7	4.9
46011	34.9N	120.9W	1.8	0.5	0.4	0.6	0.4	0.9	0.9	0.6	4.7	1.6	1.8	4.4	4.7	4.7	12.3	8.2	0.2		1.6	7.1	4.5	6.0	15.6	13.7
46013	38.2N	123.3W	0.4	0.6	0.5	0.6	1.5	0.5	2.2	0.5	2.0	0.7	2.9	2.9	3.2	4.0	9.9	7.0	0.2	0.6	4.9	6.7	3.2	2.7	6.4	23.6
46014	39.2N	124.0W	1.8	1.6	1.2	0.8	0.9	0.7	0.7	0.6	6.1	3.2	3.2	2.1	3.9	5.6	4.1	7.4	6.2	0.5	1.6	2.5	9.6	4.9	6.0	10.5
46017	60.3N	172.3W	1.2	2.7		1.7	1.0	0.7	0.7	0.8	3.8	3.7	7.2	2.8		1.3	0.7	5.2	4.5	8.0	3.8	5.5	6.0	3.3		0.8
46019	57.2N	170.3W	0.9		0.3	0.1	0.3	0.5			1.6	1.5	0.7	3.4	1.6	2.6	3.0	4.0	7.8	3.8	1.9	8.9	7.4	9.2	7.9	4.4
46020	55.9N	168.0W	1.5	1.0		1.0	0.8	0.4	1.2	1.5	1.1	1.0	0.3	1.6	1.5	0.4	0.9	1.8	4.2	0.4	2.4	8.6	10.9	8.3	9.3	7.6
46022	40.8N	124.5W	1.0	1.7	0.6	2.1	2.1	0.9	1.2	0.8	6.8	4.8	1.6	5.9	6.3	4.9	3.3	3.6	13.9	1.0	0.5	3.6	10.6	7.0	2.1	2.0
51001	23.4N	162.3W	0.1		0.1	0.9	0.1	0.1			1.4	2.2	6.6	3.5	0.5				13.1	20.1	16.2	4.6	0.1			

MARCH 1962			% FREQUENCY OF WIND SPEEDS (22- 33 KTS)								% FREQUENCY OF WIND SPEEDS (34-47 KTS)								% FREQUENCY OF WIND SPEEDS (>47 KTS)							
BUOY	LAT	LONG	N	NE	E	SE	S	SW	W	NW	N	NE	E	SE	S	SW	W	NW	N	NE	E	SE	S	SW	W	NW
41001	34.7N	072.3W	3.2	1.1	1.0	1.7	4.8	2.5	1.5	1.9					1.4	0.1										
41002	32.3N	075.3W	0.3	0.7	0.9	0.1	2.7	1.3	2.2	0.3					0.1											
41004	32.6N	078.7W		0.8	0.4			0.8	0.6	0.2																
42001	25.9N	089.7W	1.5	1.8	1.6	<.05				1.3			0.1													
42002	26.0N	093.5W	0.9	0.8	0.1					1.7																
42003	26.0N	086.0W		1.8	0.3	0.7			0.2	0.7																
42007	30.1N	088.9W	1.9	1.0	1.7					1.2																
42008	28.7N	095.3W	3.0	4.8	0.1	0.4				1.6																
42010	29.7N	093.4W	7.0	0.1						0.2																
42011	29.6N	093.5W	2.0	5.7	0.6	0.3				0.4																
44003	40.8N	068.5W					0.7	0.5	1.8	2.5																
44005	42.7N	068.3W	0.1		1.0	1.2	2.7	1.1	8.5	8.2																
44006	36.3N	075.4W	2.2	0.8	0.5	0.1	0.3			1.3																
44007	43.5N	070.1W	0.1				0.3	0.2	2.3	0.6																
45007	42.7N	087.1W	0.3			0.1	0.8	0.1	0.6	0.1																
46002	42.5N	130.0W	1.2		2.2	<.05	0.5	2.5	0.7	1.6																
46003	52.0N	156.0W	1.4	<.05	0.3	1.9	8.0	3.0	6.0	13.1	0.1					0.6	1.7	6.6								
46004	51.0N	136.0W	0.8	0.5	2.8	1.7	0.8	2.4	5.1	3.8						<.05	0.1									
46005	46.0N	131.0W	0.5	<.05	0.1	<.05	2.8	3.9	5.0	6.0					0.3	0.1										
46006	40.7N	137.7W	7.2	9.1	3.7	6.2		0.7	9.6	17.1	0.5	0.2		0.1		0.3	3.0	0.9								
46010	46.2N	124.2W				0.5	11.3			0.7																
46011	34.9N	120.9W			0.2	0.9		0.1	1.1	0.7																
46013	38.2N	123.3W		<.05	0.3	1.3	2.1	1.3	0.8	6.2																
46014	39.2N	124.0W	2.4			1.4	3.7	0.7	0.6	4.8				0.1	0.6											
46017	60.3N	172.3W	1.0	13.8	3.8	6.3	5.7	2.7					0.7			0.7										
46019	57.2N	170.3W	4.7	2.0	4.6	5.0	2.0	2.6	4.7	2.6																
46020	55.9N	168.0W	1.5	1.0	1.7	7.2	7.0	2.6	6.2	4.1				0.4			0.4									
46022	40.8N	124.5W	4.2			0.6	5.4	1.0	0.3	0.1					0.1											
51001	23.4N	162.3W	0.1	7.8	14.2	0.2																				

Nationality	Date	Position of Ship		Time GMT	Wind		Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C		Sea Waves†		Swell Waves		
		Lat. deg.	Long. deg.		Dir. 10°	Speed kt.				Air	Sea	Period sec.	Height ft.	Dir. 10°	Period sec.*	Height ft.
PACIFIC	MAR.															
SMZH	25	49.9 N	148.0 W	00	27	50	1 NM	26	1007.0	9.0	5.0	5	11.5	27	5	11.5
JIOW	25	52.0 N	151.4 W	00	30	M 37	1 NM	24	1007.0	- 3.0	5.0	6	6.5	29	7	24.5
JKZF	25	51.9 N	143.8 W	00	28	M 38	1 NM	70	0997.0	1.5	5.0	5	16.5	29	8	26
WZJG	25	35.3 N	156.0 E	00	20	30	5 NM	05	1018.0	17.8	13.4	6	6.5	22	13	29.5
8KWS	25	52.8 N	167.3 E	06	14	M 29	1 NM	61	0996.2	3.0	3.0	8	13	11	12	26
EUDT	25	47.0 N	152.3 E	06	20	16	10 NM		0982.1	0.0	1.2	3	3	17	12	32.5
JMRB	25	53.3 N	156.8 W	06	32	M 48	50 YD	75	1011.0	- 3.0	4.0	7	16.5	31	9	19.5
LIQ7	25	52.8 N	148.6 W	06	29	M 40	.5 NM	26	0996.0	- 3.0		XX	36			
UEKX	25	54.3 N	161.2 E	06	05	M 50	.5 NM	73	0994.9	2.2		12	13			
D5DW	25	44.5 N	148.2 W	18	31	M 37	2 NM	16	1015.0	5.0	8.0	16	19.5	32	14	29.5
KHRP	25	48.8 N	152.0 W	18	31	M 42	5 NM	26	1010.0	3.0	4.0	7	19.5	32	8	24.5
KSBK	25	49.3 N	131.5 W	18	26	M 13	10 NM	24	1001.3	2.2	6.1	2	1.5	29	7	24.5
WMTO	25	49.4 N	134.3 W	23	26	18	5 NM	26	1001.0	2.7	7.2	3	6.5	30	10	24.5
JIOW	26	50.1 N	158.0 W	00	32	M 35			1018.5	1.5	5.0	7	8	32	8	24.5
JKZE	26	51.6 N	147.2 W	00	30	M 36	.5 NM	70	0994.0	2.0		5	16.5	30	8	29.5
KHRP	26	48.8 N	148.5 W	00	31	M 35	5 NM	26	1003.5	4.0	4.0	7	19.5	32	8	24.5
WZJG	26	35.9 N	166.9 E	00	20	20	5 NM	03	1023.2	14.4	14.0	5	10	33	12	24.5
D5DW	26	44.5 N	144.1 W	06	30	M 27	5 NM	01	1010.0	5.0	8.0	12	13	37	14	26
JQOF	26	32.1 N	123.4 W	06	01	M 78			1008.5		13.5	4	8	30	8	10
5LJT	26	50.8 N	165.9 E	12	24	M 45	2 NM	07	0999.0	3.0	1.0	6	24.5			
H3AG	26	52.4 N	169.8 E	12	20	M 49	5 NM	22	0995.0	2.0	4.0	7	10	20	9	19.5
GBPW	26	23.9 N	169.9 W	18	10	M 30	5 NM		1011.5	21.7	23.0	6	10	10	10	26
WLDT	26	53.6 N	175.2 E	18	23	50	5 NM	02	1002.0	2.8	2.8	5	10	23	9	18
5LLP	27	44.9 N	140.1 W	00	27	M 20	> 25 NM	03	1000.4	8.0		5	16.5	28	8	36
H3AG	27	52.1 N	168.0 E	00	23	M 49	5 NM	40	1001.0	2.0	5.0	5	13	23	7	19.5
UTUD	27	52.0 N	165.9 E	00	25	M 39	1 NM	72	0998.6	2.2	2.2			22	10	39
WLDT	27	53.1 N	170.9 E	06	21	55	5 NM	22	1001.5	2.2	3.3	6	13	22	10	23
USHP	27	46.9 N	152.4 W	12	10	60			1017.5	- 1.4	1.0	1	1.5	31	2	1.5
3EYN	28	44.1 N	140.3 W	00	36	M 70	> 25 NM	03	1013.0	11.5	11.0	8	6.5	36	9	13
BPPU	28	32.2 N	126.0 E	06	01	78										
UMTR	28	34.5 N	161.0 E	06	31	M 16	10 NM	02	1021.2	15.0	10.7	3	6.5	29	9	26
BPKH	28	34.9 N	122.6 E	12	22	66	10 NM	02	1014.0	7.3						
BPRP	28	33.0 N	126.4 E	12	01	78										
URHJ	28	52.6 N	156.1 E	12	10	M 58		74	1012.0			3	5	24	6	6.5
HPVK	28	32.6 N	143.8 E	23	32	M 26	2 NM	04	1021.5	11.1		14	29.5	32	14	29.5
JHYA	29	30.6 N	145.9 W	06	01	M 50	5 NM	00	1020.0		18.5					
D5XP	29	27.6 N	165.0 W	12	09	M 25	5 NM	80	1016.2	19.8	20.0	4	8	07	8	24.5
ERSN	29	36.2 N	142.2 E	12	01	54	10 NM		1025.2		14.3					
GVOV	30	34.5 N	174.6 E	18	15	M 37	5 NM	15	1007.9	17.1	16.5	4	19.5	15	11	26
WZJG	30	41.0 N	139.8 W	18	33	32	5 NM	27	1011.2	8.4	10.7	4	10	31	11	36
JEYJ	31	12.5 N	92.6 W	00	13	M 10	10 NM	02	1010.0	31.0	27.0	3	3	09	80	55.5
WZJG	31	39.5 N	134.5 W	06	33	35	10 NM	01	1009.1	6.7	12.2	11	29.5			
EWGF	31	37.2 N	123.2 W	12	18	M 48	2 NM	63	1009.1	11.5	12.8	7	13	19	10	16.5

+ Direction for sea waves same as wind direction
X Direction or period of waves indeterminate
M Measured wind

NOTE: The observations are selected from those with winds ≥ 35 kn or waves ≥ 25 ft from May through August (≥ 41 kn or ≥ 33 ft, September through April).

U.S. Cooperative Ship Weather Reports

January, February and March 1982

TOTAL WEATHER REPORTS RECEIVED FROM US COOPERATIVE OBSERVING SHIPS JANUARY-MARCH 1982

SHIP	VIA RADIO	VIA MAIL		VIA RADIO	VIA MAIL		VIA RADIO	VIA MAIL		VIA RADIO	VIA MAIL		VIA RADIO	VIA MAIL		VIA RADIO	VIA MAIL
3EFD	21	198	3EFI	40	54	3EKN	13		3FNE		28	3EOU	19	105	3EON	19	
3EVN	27	77	3EZZ	65		3FHK	23		3FJK	12	93	3FTB	10	187	3FXN	1	
4XLR	18		5B2387	54	177	5LAD		55	5LPU	32		5LCI	1	74	5LCU		108
5LCM		226	5LCU		38	5LFX	20		5LGK	33		5LHX	7		5LIK	39	75
5LJT		301	5LKH	25	57	5LKL	122	225	5LOT		36	5LPA	32	163	5LRN	54	
5LTT	31		5LUG		91	5LVG	19		5LWG	30		5LXC		60	5LYD	31	34
5LZB	33		5LZI	14		5LZJ	2	79	5LZK	6	121	5MAZ	79	142	5MCB	6	13
5MCN	6		5MGC	87	140	5MHS	16		5MKV	16	98	5MML	33	163	5MPK	6	25
5MPC	39	44	5MPS	6		5MOL	8	55	5MRW	25	44	5MSS	6		5MTA	26	
5MUC	27	56	5MUE	3	158	5MYK	38	44	6ZAK	3		6ZBT	6	8	6ZCJ		173
6ZPA	4		6ZDN	21	14	6ZEH	6		6ZFW	11	6	6ZHX	10		6ZKM	57	
6ZMT	19		6ZOD		31	6ZSG		21	6ZWU	5	19	8JXB	31		9MTR	1	
9VBS	13		9VNW	4		9VPR	7	23	9VPU	12	86	9VVD	19	92	9VVK	58	122
9VYX	6	117	9VYA	22	16	A8CM	1	138	A8CV	5	123	A8CY	1		A8CZ	92	248
A8DD	29	227	A8EE	15		A8FW	20		A8GI	5	32	A8GJ	8		A8GP	39	61
A8EU	13		A8IB	34	174	A8JP	21		A8JQ	37	175	A8NF	14		A8OG	8	113
A8KI	3	139	A8SL	17	26	A8TF	19		A8UA	21	82	A8UH	17		A8VI	13	
A8WR	34		A8WN	12	19	A8YC	12		A8YI	25		ATGY	46		ATTK	1	
BLHO	9		BLHV	9		BLHW	26	68	BLHX	37	41	C2DC	53	54	CBHO	18	51
CSCW	11	20	CSDU	17	103	D5AN	17		D5DW	13	77	D5FU	16		D5GO		21
D5HC	27		D5IG	39	61	D5JV	8	16	D5MS	12	219	D5NW	23	51	D5NZ	68	89
D5OD		60	D5OE	57	223	D5PY	2	9	D5TG	29		D5VK		32	D5WE	6	32
D5XO		41	D5YM	20	14	D7PF		25	D7OE	6		D7SD	20		D7SF	18	
D7YR	13	30	D8ON		14	D8TP	1	3	DDFB	8		DGRL	23	50	DIIU	31	
DLDE	117	214	DNAO	5		DNKL	13		DVEL	4	47	DZSX		37	DZHL	2	
DZMK	13	139	DZSO	4	16	EAFI	14	134	EHBZ	13		EHGD	3	12	EHOK	18	
ELAD	6		ELAJ6	7	49	ELAP3	52	88	ELAW3	14	23	ELDJ	3	28	ELEC	41	239
ELEM		70	ELFO	18		ELGI	32	45	ELIN	8	52	ELIQ	30	107	ELKX	15	103
ELNZ	11	39	ELOC	4	125	ELRE	4		ELTO	32	31	ELUD	95		ELUN	4	
ELUC		32	ELVA	5	44	ELXF	5	18	ELXP	23	180	ELXV	31	35	ELYF	11	15
ELYM		33	FNJE	29		GJVO	31		GOVJ	1		GOZD	28	83	GPEY	123	197
GPHU	83	109	GOOW	20		GRAF	41		GYEV	54	1	GYFQ	45		GZZS	90	
H3AC	21	209	H3AU	5	118	H3GX	1	6	H3ND	9	167	H3NH	9	61	H3PW	9	12
H3SI	15	102	H3WN	17	165	H3WZ	6	16	H3YP	14		H8DF	13		H8LR	26	163
H9CK	57	95	H9IB	1		H9CV	8	61	H9TM		89	H9VM	70	207	H9XW	16	36
H9ZO		119	HBDG	5	27	HCPT	3		HCDT		240	HOKL	2		HOMQ	112	
HODE	101	179	HOVS	60	9	HPAI	15	75	HPAU	19		HPGV	1		HPID	3	
HPMG	2		HZOP	71	80	HZOQ	18	40	IBKL	11	13	IBPA	24	49	ICDR	21	68
JBCS	103	102	JBMS	71	28	JDZA	42	16	JFIR	14	7	JKBI	144	75	JKHO	5	190
JKL6	14	67	JKOH	40		JMPB	79		JNBY	75	53	JNJL	33		JNXV	26	27
JPCP	20	48	JPKG		58	JPND	44	59	JOWT	103		JREL	32		KAAC	30	74
KAPH	7	5	KAAI	48	164	KAAJ	6		KAAV	11	37	KACF	20	161	KACK	39	
KAFB	34	83	KADK	13	105	KADP	75	103	KAFC	33	51	KAIP	21	60	KASJ	23	183
KAYP	18	35	KBCF	16		KBGA	1		KCRE		61	KCEJ	54	96	KCKB	37	71
KCPD	5	25	KCSA	34	129	KCSE	20	143	KDDW	7	77	KDGA	39	69	KEAF	29	42
KEAG	1		KEAH	42	79	KEAJ	31	71	KFAN	1		KEAL	3		KEHJ	22	116
KEMP	12	29	KEOC	30	40	KEOD	25	205	KEXB	4	102	KFBT	5	24	KFCS	25	91
KFCV	44	156	KFCX	42	157	KFDH	26	84	KFDV	26	60	KFDZ	27	102	KFEJ	58	85
KFFM	64	180	KFEY	24	147	KFEZ	38	129	KFFJ	26	144	KFGJ	50	187	KFHX	20	
KFLF	11	2	KGBD	7	66	KGBE	69	174	KGDF	12	46	KGJB	66	165	KGJD	38	124
KGJX	35	174	KGMK	3	15	KGSM	47	155	KGWT	65	198	KGWU	5	119	KGXA	10	69
KGYE		147	KHBA	46	79	KHJB	70	159	KHLQ	10	45	KHLX	61	151	KHNB	26	45
KHPF	44	193	KHRH	46	152	KHRK	46	199	KHPP	25	168	KIBK	13		KIEH	41	107
KIDL	6	67	KIGR	37	67	KIHD	17	69	KIHS	5	11	KIOH	25	118	KIRF	57	159
KIPH	14	86	KIVP		10	KIYG	43	101	KIYN	1	4	KIYO	44	88	KIYP	31	42
KJDG	21	184	KKFW	17	63	KKJA	65	151	KKLA	22	21	KLEZ	46	141	KLHR	42	180
KLHZ	51	97	KLJH	44	84	KLPN	45	181	KMJH	46	92	KNBD	48	42	KNCS	10	119
KNEJ	6		KNFD	11	42	KNFN	14		KNIJ	79	180	KNJA	21		KNJF	2	
KNFW	1	61	KNKX	8	39	KNLO	82	203	KOEW	12	57	KOHB	45		KOHD	15	95
KPCM	25	92	KPCV	57	186	KPEA	4	21	KPGQ	6	150	KPHB	11	79	KPHS	31	11
KPHZ		67	KPJC	38	79	KPNA	15	24	KOYK	42	178	KRDH	42	203	KRFC	4	35
KRCB	24	105	KRHI	3	35	KSBK	51	123	KSDF	50	98	KSFJ	23	40	KSLB	56	144
KSLJ	50	163	KSNP	42	68	KSPY	33	224	KTHC	63	248	KTKX	50	161	KVFN	12	33
KVPV	8	93	KVMU	16		KVNZ	4		KVWH	51	183	KWAH	3	16	KYDA	20	86
KYVN	8	91	LADE	86	53	LCJK	27	31	LCKF	9	32	LDEF	10		LDHU		107
LECK	11		LEOY	59		LEOZ	39		LEUX	9	35	LEVN	1		LFEA	7	52
LFEI	8	76	LFEN	12	27	LFMK	8	31	LGGH	66	76	LGXS	25	39	LHOE	12	36
LMUR	62		LIBD	19	38	LICS	29	67	LICX	5		LIDD	21	14	LION	45	178
LIPZ	27	102	LITA	21		LIVI	3	23	LKOH	7		LMGQ	9		LMRH	2	28
LMTW	37		LNPB	9		LQBY	1		NAAD	39		NAEE	16	24	NAOD	66	
NBAC	29	46	NBIJ	6	61	NBLM	7	68	NBPG	1		NBTM	16		NCFX	15	80
NCPG	47	30	NDXA		84	NEKF	1	48	NFDT		147	NFKO	2		NGYS	1	
NGYV	2	104	NHNF		72	NHWR	20	29	NIDR	4	148	NIRX	23		NJZP	14	70
NKCL		26	NKRV		47	NLFI		38	NLKL	160		NLPM	5		NLVS	1	
NMAG		17	NMWJ	12		NMUD	10		NNGP		20	NNHB	4		NMUD	4	
NOCL	30		NODX	5		NODZ	16		NOWK	18		NRDB	26		NMDD	40	
NRDT	20		NRFJ	27	49	NRPJ	9		NRPQ	10		NRUC	12		NRUN	2	
NRUO	81		NRXC	55		NSTF		77	NTUG	24		NTYT	4	61	NUOP	68	72
NVAI	12		NYCO		58	NZSK	1	26	NZVE	28		OUIU	16	46	OURF	5	
OVYZ	27	39	OWCY	28	49	OWEC	18	54	OWHQ	3		OWIK	16	77	OXFU	52	110
OXMS	1		OXIT	20	80	OXJF	10	27	OXNS	18	26	OXON	75	136	OXSF	38	66
OXTZ	53		OXZH	11	51	OYBG	10	137	OYTT	14	109	OYIU	3		OYKS	40	149
OYPZ	15	39	OZES	9		PJYG	133	169	PLYA	19	88	PPEL	4		S6CC	44	60
S6CV	1		S6HF	5	50	SFAN	1		SGNA	24	47	SLFT	10	48	SMWA	42	11
VCF137	14		WAFA	30	59	WBAE	9	3	WCGN	104	141	WCHF	30	46	WCIO	82	159
WCTP	46	68	WCJS	14	64	WCUU	6		WDOP	33	138	WDOU	51		WEBW	17	41
WELN	17	84	WEWW	123	237	WEZD	35	159	WEZH	14	139	WEZM	64	189	WEZT	15	35
WE7U	20	56	WFDP	127	101	WFOW		39	WFLM	10	32	WFOB	63	236	WFQE	55	249
WGEB	59	92	WGJC	32	52	WGJW	28	160	WGKC	21	84	WGKE	1	37	WGKF	60	223
WGLW	3		WGWA	2		WGWB	84	85	WHBH	27	34	WHDN	29	30	WHGA	42	168
WHIX	22	53	WHMK	28	73	WHML	66	119	WHNG	11	32	WHSJ	3		WHTP		9
WHTR	3		WHTS	11		WHTU	5		WIAG	20		WIBK	30	195	WIEE	20	27
WICE	23	88	WIPL	46	39	WJAF	17	58	WJAJ		39	WJBG	31	75	WJBJ	29	115
WJCG	3	73	WJDC		14	WJDH	11		WJGH	12		WJGO	94	147	WJHA	20	55
WJHN	16		WKIM	25	51	WKIY	23	139	WKJO	25	86	WLAH	28		WLBP	23	88
WLPY	5	123	WLCG	13	27	WLCI	24	40	WLCV	14	78	WLCW	4		WLDD	23	88
WLOF	64	136	WLDN		30	WLDP	29	101	WLDT	55	238	WLDW	6	42	WLGB	29	52
WLCP	10	86	WLCR	16	128	WLGS	9	19	WLPL	43	163	WLSG	10	96	WMBK	27	
WMFQ	9	42	WMCK	14	104	WMCV	68	118	WMEY	26	49	WMIG	24	78	WMRG	15	12
WMPJ	5	22	WMRU	16	64	WMSD	21	57	WMSF	9		WMTO	8	66	WMVF	54	62
WNAJ	19	18	WNCU	77	212	WNDF	89	152	WNDJ	70	151	WNDM	40	58	WNDO	84	105
WNOW	31	91	WNEI	39		WNEJ	4	158	WNFJ	35	84	WNGI		16	WNHL	6	21
WNHP	71	175	WNPO	57	77	WNVM	4		WNVW	12	37	WOVS	51		WPGE	38	176
WPGJ	49	214	WPGK	20	2	WPHI	11	59	WPJR		54	WQZ4220		9	WRGL	18	24
WRCO	39	84	WSCJ	59	201	WSDF	27	51	WSDX	27	189	WSIN	41	69	WSLH	47	186
WSNA	35	194	WSNB	21	91	WSNH	22	148	WSRH	76	217	WSRL	30		WSRP	12	34
WSRY	13	17	WSVB	22	160	WSVP	42	238	WT6775		30	WTDF	69	104	WTDK		12
WTCA	75	131	WTEG	45	156	WTEQ	3		WTER	4	10	WTES	23		WTEW	14	70
WTST	70	137	WURV	32	95	WVFX	27	74	WVFZ	52	177	WVHS	33	162	WWND	52	160
WWPI	47	126	WXBR	23	87	WYBI	46	195	WYS3261		36	WZJA	2	76	WZJB	8	95
WZJC	20	112	WZJD	33	111	WZJE	17	179	WZJF	24	149	WZJG	29	158	WZL8190		5
XCBA	3		XCML	2		XCPH	1	19	YTFV	14		YTMG	1		YTMN	17	
ZCYD	13	16	ZCKP	43													

SUMMARY: GRAND TOTAL VIA RADIO> 16807 GRAND TOTAL VIA MAIL> 43023

NOTICE: In the SPRING,1982 issue,U.S. Cooperative Ship Weather Reports, October, November, December 1982 the grand totals were reversed. They should read; via radio 30398, via mail 65851.

U.S. Ocean Buoy Climatological Data

January, February and March 1982

JANUARY 1982 — AIR TEMPERATURE (DEG C) / SEA TEMPERATURE (DEG C) / AIR-SEA TEMPERATURE DIFFERENCE (DEG C)

			AIR TEMPERATURE (DEG C)							SEA TEMPERATURE (DEG C)							AIR-SEA TEMPERATURE DIFFERENCE (DEG C)						
BUOY	LAT	LONG	OBS	DAYS	MAX	DY HR	MIN	DY HR	MEAN	OBS	DAYS	MAX	DY HR	MIN	DY HR	MEAN	OBS	DAYS	MAX	DY HR	MIN	DY HR	MEAN
41001	34.7N	072.3W	730	31	21.2	15 01	00.9	11 00	12.6	739	31	21.2	30 19	17.8	27 21	19.2	740	31	02.1	15 01	-18.2	11 00	-06.6
41002	32.3N	075.3W	675	29	23.9	14 16	04.4	11 07	16.4	675	29	24.2	21 15	20.7	28 09	22.5	675	29	01.0	14 16	-17.2	11 06	-06.1
41003	30.3N	080.4W	144	06	22.2	03 21	12.7	05 17	18.8	144	06	21.0	01 17	20.2	05 03	20.6	144	06	01.5	03 10	-07.9	05 12	-01.8
41004	32.6N	078.7W	720	31	21.6	03 15	00.1	11 21	12.9	741	31	20.8	03 18	15.7	29 11	18.1	741	31	03.5	31 23	-17.1	11 21	-05.5
41005	31.7N	079.7W	415	18	22.7	03 14	00.1	11 09	13.7	423	18	21.2	08 09	17.8	17 13	19.4	423	18	01.9	03 14	-19.9	11 13	-05.9
42001	25.9N	089.7W	739	31	26.3	01 18	15.1	15 00	22.9	741	31	23.9	01 19	21.2	12 05	22.6	741	31	03.3	22 14	-06.9	15 00	00.4
42002	26.0N	093.5W	739	31	24.2	03 16	09.3	14 09	20.3	739	31	24.0	01 21	21.3	26 08	22.2	739	31	01.3	22 19	-12.5	14 09	-01.9
42003	26.0N	086.0W	740	31	26.1	01 16	13.4	15 00	22.0	740	31	26.9	31 19	25.2	15 08	25.7	740	31	00.2	04 15	-11.9	15 00	-03.7
42008	28.7N	095.3W	590	27	20.5	07 14	00.1	11 06	13.1	626	27	15.7	06 20	09.7	14 23	12.8	626	27	08.0	23 01	-13.9	11 06	-00.4
42010	29.7N	093.4W	540	27	20.2	26 00	00.0	13 21	11.7														
42011	29.6N	093.5W	669	31	19.5	03 18	00.2	12 03	12.8														
44003	40.8N	068.5W	400	23	11.4	05 02	00.0	09 09	04.4	741	31	07.1	01 07	04.2	28 03	05.4	741	31	04.9	05 04	-06.2	09 09	-02.8
44005	42.7N	068.3W	292	20	10.7	05 02	00.0	06 07	03.8	740	31	07.5	01 22	05.4	23 04	06.2	741	31	03.6	05 02	-06.9	02 18	-04.1
44006	36.3N	075.4W	578	28	14.6	04 18	00.0	13 05	06.1	714	31	08.9	01 07	04.7	27 11	06.8	714	31	06.1	04 18	-07.9	13 05	-01.8
46001	56.0N	148.0W	672	30	05.5	28 20	00.0	08 14	03.2	722	31	04.4	01 02	03.7	22 06	04.0	722	31	01.6	28 20	-04.3	01 00	-01.0
46002	42.5N	130.0W	740	31	12.4	23 23	04.5	21 09	09.1	740	31	11.5	01 01	10.5	22 09	11.0	740	31	01.6	23 23	-06.1	02 05	-01.9
46003	52.0N	156.0W	702	31	06.2	31 23	00.0	07 06	03.6	719	31	05.5	01 01	04.9	10 09	05.2	721	31	01.1	31 23	-05.1	07 06	-01.6
46004	51.0N	136.0W	357	16	08.6	08 15	00.3	04 00	05.6	361	16	06.6	01 01	06.2	03 09	06.4	361	16	02.1	08 15	-06.0	04 00	-00.9
46005	46.0N	131.0W	736	31	10.4	23 18	03.0	01 12	07.4	740	31	11.0	01 01	09.9	27 08	10.4	740	31	00.0	23 18	-07.9	01 12	-03.0
46006	40.7N	137.7W	725	31	15.0	22 21	08.2	26 03	11.6	741	31	12.7	11 00	11.5	26 15	12.1	741	31	03.2	22 21	-03.9	17 18	-00.5
46010	46.2N	124.2W	715	31	11.4	25 19	00.0	06 22	06.6	737	31	12.4	27 21	07.3	10 09	10.1	739	31	00.0	25 10	-09.9	06 18	-03.6
46012	37.4N	122.7W	608	26	14.3	10 00	06.8	02 17	10.4	608	26	12.5	01 01	10.9	20 17	11.7	608	26	02.5	10 00	-05.1	02 17	-01.2
46013	38.2N	123.3W	731	31	13.0	04 15	05.2	21 09	09.7	731	31	12.7	29 02	10.2	07 21	11.5	732	31	01.2	13 22	-06.2	21 09	-01.8
46014	39.2N	124.0W	740	31	13.2	30 23	05.7	20 18	09.8	740	31	12.8	30 23	10.4	10 11	11.9	740	31	01.2	11 00	-06.4	20 18	-02.0
46016	63.3N	170.3W	003	01	00.4	20 12	00.4	20 09	00.4														
46017	60.3N	172.3W	032	06	01.9	03 15	00.1	01 03	00.6														
46019	57.2N	170.3W	114	19	06.4	17 18	00.1	24 12	02.4														
46020	55.9N	168.0W	083	11	04.2	27 09	00.3	22 18	01.9														
46021	57.7N	160.0W	015	04	00.9	01 11	00.1	02 05	00.6	055	07	00.6	01 05	00.2	06 14	00.5	054	07	00.7	06 14	-00.5	02 05	00.1
46022	40.8N	124.5W	315	14	11.8	25 21	05.3	19 21	08.9	316	14	10.9	28 17	09.7	22 10	10.4	316	14	01.5	25 21	-04.9	19 21	-01.4
51001	23.4N	162.3W	741	31	24.5	01 03	17.6	21 08	22.1	741	31	24.6	31 12	22.8	15 18	23.5	741	31	00.9	15 02	-05.8	21 08	-01.4

JANUARY 1982 — PRESSURE (MB) / WIND SPEEDS (KNOTS) / MEAN WIND SPEED (KNOTS)

			PRESSURE (MB)							WIND SPEEDS (KNOTS)				MEAN WIND SPEED (KNOTS)								
BUOY	LAT	LONG	OBS	DAYS	MAX	DY HR	MIN	DY HR	MEAN	OBS	MAX	DY HR	DIR	N	NE	E	SE	S	SW	W	NW	TOTAL
41001	34.7N	072.3W	739	31	1032.5	23 01	987.4	15 01	1017.9	738	48	15 02	230	18.6	12.9	11.3	19.8	23.2	16.3	23.4	21.4	19.9
41002	32.3N	075.3W	675	29	1030.1	30 00	994.2	14 21	1019.6	674	40	15 00	260	14.8	11.4	11.0	12.9	19.3	19.7	19.3	18.8	17.2
41003	30.3N	080.4W	144	06	1026.8	05 16	1012.9	01 06	1020.1	144	26	01 02	240	10.9	9.4	11.1	11.1	14.5	14.4	16.1	13.8	12.7
41004	32.6N	078.7W	741	31	1031.1	27 16	992.6	14 20	1019.2	739	34	14 20	250	14.9	13.9	9.9	7.9	13.1	14.8	16.0	15.2	14.3
41005	31.7N	079.7W	423	18	1026.9	18 16	995.9	14 18	1018.3	423	35	14 19	250	12.1	13.1	9.0	11.7	12.1	13.7	16.2	16.1	14.3
42001	25.9N	089.7W	741	31	1028.9	11 16	1005.0	14 00	1019.4	735	37	14 13	310	16.2	14.4	10.9	12.9	13.6	8.4	3.4	20.8	13.6
42002	26.0N	093.5W	739	31	1029.6	11 16	1004.1	13 20	1017.8	737	34	14 01	330	15.8	12.4	8.7	12.5	11.4	12.0	12.3	20.4	13.1
42003	26.0N	086.0W	740	31	1025.7	11 16	1001.8	14 08	1019.3	732	33	14 15	280	11.9	12.8	11.8	12.9	15.7	12.0	12.4	15.0	13.0
42008	28.7N	095.3W	720	31	1037.3	11 11	1005.2	30 22	1019.9	722	32	31 15	310	17.0	12.6	11.1	11.4	11.4	9.1	15.7	17.5	13.4
42010	29.7N	093.4W	601	27	1035.8	11 16	1005.0	31 01	1019.8	601	29	31 13	270	15.5	14.9	11.4	12.3	12.0	10.1	15.2	14.5	13.3
42011	29.6N	093.5W	726	31	1035.3	11 12	1003.6	31 02	1018.1	721	30	08 07	010	16.0	14.5	11.8	11.5	11.2	9.9	14.3	15.0	12.9
44003	40.8N	068.5W	741	31	1036.0	23 02	976.0	15 08	1014.4	734	31	05 22	290	15.3	11.6	8.6	13.6	17.4	12.5	17.8	19.7	16.9
44005	42.7N	068.3W	740	31	1036.6	23 03	978.3	15 08	1013.4	739	40	02 06	350	20.5	14.1	16.4	18.1	24.6	18.2	23.4	24.1	21.6
44006	36.3N	075.4W	714	31	1035.5	22 17	991.0	14 22	1018.7	699	32	15 03	300	16.8	12.3	12.7	16.6	14.3	13.4	18.1	17.5	15.6
46001	56.0N	148.0W	722	31	1027.6	20 08	982.9	23 16	1005.3													
46002	42.5N	130.0W	740	31	1036.6	31 20	997.5	25 17	1020.2	739	34	02 05	330	12.6	9.2	9.8	4.9	14.0	15.0	17.5	16.6	14.7
46003	52.0N	156.0W	715	31	1034.8	18 21	979.8	28 00	1006.0	719	46	16 04	290	12.1	27.1	14.5	20.8	19.1	19.4	23.7	23.0	21.1
46004	51.0N	136.0W	361	16	1025.9	11 12	997.5	01 04	1014.4	358	30	02 14	320	17.6	16.3	11.4	15.5	18.6	20.0	19.0	17.9	18.7
46005	46.0N	131.0W	740	31	1034.7	31 20	983.2	25 22	1016.2	739	42	25 21	220	14.5	3.7	22.4	17.6	18.8	19.4	20.7	21.1	20.0
46006	40.7N	137.7W	739	31	1033.4	13 19	999.4	03 14	1023.0	739	36	26 06	310	21.5	14.3	18.7	13.6	16.9	20.2	18.6	23.6	19.3
46010	46.2N	124.2W	737	31	1035.4	07 03	995.3	01 23	1017.4	734	33	25 23	180	11.8	5.9	9.7	11.8	17.0	15.8	12.3	13.4	13.3
46012	37.4N	122.7W	608	26	1033.1	23 19	1002.0	20 23	1018.8	602	39	04 09	160	10.5	11.0	6.2	15.5	17.6	13.1	12.4	12.6	12.0
46013	38.2N	123.3W	731	31	1034.4	23 18	1000.4	20 22	1020.4	710	34	04 11	180	4.8	7.6	8.9	13.9	13.5	10.8	12.8	12.7	11.2
46014	39.2N	124.0W	740	31	1033.2	23 20	998.3	20 22	1019.3	728	36	04 07	150	14.6	7.8	7.2	13.9	12.6	11.9	12.7	16.4	13.0
46016	63.3N	170.3W	191	31	1037.4	06 03	980.1	28 18	1009.9	187	39	20 09	160	13.6	16.2	16.0	17.7	15.3	7.8	9.8	12.2	15.0
46017	60.3N	172.3W	246	31	1040.5	05 21	971.1	28 18	1006.0	233	37	04 00	360	18.2	20.0	16.8	14.4	15.4	9.5	16.9	7.3	16.3
46019	57.2N	170.3W	246	31	1041.6	05 21	965.6	28 09	1005.0	245	32	10 03	040	17.0	22.5	17.9	12.2	11.7	10.4	13.0	12.4	15.2
46020	55.9N	168.0W	088	11	1000.3	25 06	960.6	28 09	985.0	096	26	27 06	140	6.0	13.9	14.9	13.5	13.2	11.2	13.1	10.8	12.9
46021	57.7N	160.0W								052	29	05 05	330	14.9	15.2	6.6	11.5	13.3	15.0	18.2	19.4	15.3
46022	40.8N	124.5W	316	14	1032.2	23 20	1000.3	20 22	1019.3	315	30	25 23	190	15.3	10.2	5.6	11.5	17.1	13.6	11.9	14.6	13.8
51001	23.4N	162.3W	741	31	1024.1	25 09	1003.2	21 03	1014.4	736	28	21 10	250	10.3	13.9	14.1	12.0	13.4	14.9	10.7	11.1	12.6

JANUARY 1982 — WAVE HEIGHTS (METERS) / FREQUENCY OF WAVE HEIGHTS (%)

			WAVE HEIGHTS (METERS)				FREQUENCY OF WAVE HEIGHTS (%)							
BUOY	LAT	LONG	OBS	MAX	DY HR	MEAN	<1M	1-1.5M	2-2.5M	3-3.5M	4-5.5M	6-7.5M	8-9.5M	>9.5M
41001	34.7N	072.3W	729	7.5	15 08	2.8		23.8	32.6	15.9	23.8	3.7		
41002	32.3N	075.3W	673	7.5	15 02	2.4		37.8	26.8	20.8	12.6	1.7		
41003	30.3N	080.4W	144	2.5	01 00	1.5	0.6	68.0	31.2					
41004	32.6N	078.7W	741	4.5	14 23	1.7	7.1	50.2	28.2	13.2	1.2			
42001	25.9N	089.7W	739	5.5	14 17	1.4	18.1	56.4	19.4	3.1	2.8			
42002	26.0N	093.5W	739	5.0	14 04	1.5	5.1	66.9	14.8	10.5	2.4			
42003	26.0N	086.0W	739	6.0	14 16	1.5	14.2	58.5	18.5	6.0	2.0	0.5		
44003	40.8N	068.5W	740	7.0	05 20	3.0	1.0	17.0	32.9	18.2	28.2	2.4		
44005	42.7N	068.3W	739	6.5	06 01	2.5	4.0	26.5	28.5	23.0	17.4	0.4		
46001	56.0N	148.0W	693	9.5	23 02	3.6		5.4	26.5	27.7	32.3	5.1	2.7	
46002	42.5N	130.0W	739	8.5	02 02	3.3	0.5	21.7	16.1	26.1	27.4	7.5	0.4	
46004	51.0N	136.0W	352	5.0	07 16	3.1		0.5	36.0	39.2	24.1			
46005	46.0N	131.0W	738	10.5	26 06	3.5		9.4	22.4	25.8	33.7	6.2	1.8	0.2
46006	40.7N	137.7W	733	7.5	02 02	3.3		17.1	23.4	23.4	29.6	6.2		
46010	46.2N	124.2W	724	7.0	26 17	3.0	0.1	13.9	32.5	26.5	23.8	2.9		
46012	37.4N	122.7W	606	7.0	04 18	2.3		39.9	29.2	15.1	15.3	0.3		
46013	38.2N	123.3W	409	5.0	19 12	2.3	2.4	33.2	25.1	30.5	8.5			
46014	39.2N	124.0W	739	8.0	02 15	2.8	1.0	21.1	23.5	31.5	20.9	1.6	0.1	
46022	40.8N	124.5W	316	6.0	29 03	3.4			24.0	35.1	40.5	0.3		
51001	23.4N	162.3W	740	7.0	06 21	2.9		9.1	38.9	31.7	18.5	1.6		

JANUARY 1982 — TOTAL FREQUENCY OF WIND SPEEDS (%) / TOTAL FREQUENCY OF WIND DIRECTIONS (%)

			TOTAL FREQUENCY OF WIND SPEEDS (%)							TOTAL FREQUENCY OF WIND DIRECTIONS (%)							
BUOY	LAT	LONG	CALM	<4KT	4-10KT	11-21KT	22-33KT	34-47KT	>47KT	N	NE	E	SE	S	SW	W	NW
41001	34.7N	072.3W		2.4	14.4	38.9	38.9	5.3	0.1	16.8	7.9	5.0	8.8	16.2	6.7	20.7	17.8
41002	32.3N	075.3W		2.8	17.5	50.6	28.0	1.0		9.8	5.5	6.9	9.7	15.0	8.9	27.[illegible]	16.5
41003	30.3N	080.4W		2.8	32.6	62.5	2.1			13.2	11.8	7.8	13.7	21.7	11.5	8.3	12.0
41004	32.6N	078.7W		2.4	24.0	64.3	9.2	0.1		7.7	17.5	6.8	3.9	9.8	13.4	25.2	15.6
41005	31.7N	079.7W		1.9	26.2	59.8	11.8	0.2		6.5	14.4	2.6	2.8	11.1	16.3	26.0	20.3
42001	25.9N	089.7W		3.9	30.1	53.1	12.1	0.8		11.3	16.5	11.4	31.8	17.7	4.0	1.1	6.2
42002	26.0N	093.5W		4.5	27.7	56.9	10.9	0.1		16.2	14.1	8.3	42.9	10.4	0.9	0.9	6.3
42003	26.0N	086.0W		4.5	28.4	60.2	6.8			11.8	8.3	21.1	32.0	9.0	4.3	3.3	10.2
42008	28.7N	095.3W		1.8	29.9	55.7	12.6			21.1	10.1	12.7	29.1	9.8	3.7	1.7	11.7
42010	29.7N	093.4W	0.3	1.3	31.8	54.9	12.0			21.3	13.5	17.4	21.7	11.7	4.5	3.9	6.0
42011	29.6N	093.5W		0.3	36.6	53.7	9.4			16.7	14.9	12.8	25.6	13.6	6.6	3.6	6.3
44003	40.8N	068.5W		1.6	14.6	57.8	26.0			13.9	2.5	2.1	7.8	7.4	9.2	22.6	34.5
44005	42.7N	068.3W		1.6	9.6	31.9	50.6	6.2		14.8	4.6	3.1	7.0	6.4	12.6	27.0	24.6
44006	36.3N	075.4W		2.9	17.6	60.7	18.9			20.6	7.8	6.2	6.7	16.5	13.4	16.1	12.7
46002	42.5N	130.0W		4.2	26.3	51.7	17.7	0.1		10.6	6.6	1.9	1.6	8.0	22.0	19.0	22.4
46003	52.0N	156.0W		1.0	12.2	41.7	33.2	11.8		2.5	14.5	10.2	11.8	16.3	16.7	19.4	8.6
46004	51.0N	136.0W		0.3	9.8	55.0	34.9			14.8	2.1	1.2	1.7	13.7	32.6	21.7	12.2
46005	46.0N	131.0W		0.9	6.8	49.4	39.4	3.5		3.5	0.3	1.0	1.6	6.6	30.9	38.6	25.4
46006	40.7N	137.7W		1.6	14.1	39.8	43.2	1.4		6.6	3.8	9.7	10.0	21.0	16.9	7.0	24.9
46010	46.2N	124.2W		4.8	30.2	53.7	11.3			3.2	3.3	13.0	12.6	12.7	23.8	16.4	15.0
46012	37.4N	122.7W		5.0	34.7	55.5	4.0	0.8		26.3	20.5	5.6	5.9	9.3	3.3	6.1	23.1
46013	38.2N	123.3W		12.7	37.0	43.0	7.2	0.1		5.6	9.0	19.5	7.8	6.4	3.0	10.4	38.3
46014	39.2N	124.0W		3.2	39.3	44.0	13.5	0.1		37.5	7.2	11.5	15.3	9.1	2.7	5.2	11.6
46016	63.3N	170.3W		4.8	32.1	36.9	23.5	2.7		3.6	24.6	24.7	22.9	4.1	7.9	9.2	2.9
46017	60.3N	172.3W		7.3	25.3	33.5	31.3	2.6		8.5	25.8	18.3	20.3	10.8	7.9	5.9	2.5
46019	57.2N	170.3W		7.8	22.4	43.3	26.5			5.9	19.4	14.5	14.4	11.2	13.8	15.1	5.7
46020	55.9N	168.0W		1.2	31.4	62.8	4.7			1.2	9.9	8.1	25.3	16.3	9.8	18.3	11.9
46021	57.7N	160.0W			21.2	57.7	21.2			4.8	31.7	3.4	15.9	5.3	7.7	16.3	14.9
46022	40.8N	124.5W		4.8	27.3	59.0	8.9			28.6	5.6	2.9	26.3	21.4	7.0	4.8	3.6
51001	23.4N	162.3W		7.9	30.3	53.3	8.6			14.0	10.2	15.3	12.7	23.3	7.2	6.4	10.9

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BUOY	LAT	LONG	% FREQUENCY OF WIND SPEEDS (<4 KTS) N	NE	E	SE	S	SW	W	NW	% FREQUENCY OF WIND SPEEDS (4-10 KTS) N	NE	E	SE	S	SW	W	NW	% FREQUENCY OF WIND SPEEDS (11-21 KTS) N	NE	E	SE	S	SW	W	NW
41001	34.7N	072.3W	0.4	0.6	0.2	0.4	0.1	0.4	0.2	0.1	2.5	2.8	2.4	1.1	1.4	1.4	1.4	1.4	8.1	3.5	2.3	4.2	3.8	3.3	6.2	7.5
41002	32.3N	075.3W	0.5	0.4	0.5	0.7	0.5		0.1	<.05	2.6	2.6	2.7	2.9	1.4	1.0	3.0	1.2	4.5	2.4	3.4	5.2	6.9	4.5	13.5	10.0
41003	30.3N	080.4W	0.7	2.1							5.7	4.5	3.3	6.8	4.3	4.2		3.8	6.8	5.2	4.5	6.9	16.7	6.6	7.8	8.0
41004	32.6N	078.7W	0.1	0.3	0.3	0.7	0.2	0.1	0.1	0.6	1.2	4.0	4.2	2.2	2.5	2.2	5.7	2.0	5.9	12.5	2.4	0.9	7.1	10.0	14.3	11.2
41005	31.7N	079.7W			0.2		0.7	0.5	0.4	0.1	2.6	4.0	1.3	1.3	3.4	3.7	6.6	3.4	3.5	9.3	1.1	1.5	6.7	10.0	12.9	14.8
42001	25.9N	089.7W	0.7	0.9	0.4	1.0	0.1	0.2	0.5	0.1	1.2	3.5	4.5	10.2	6.3	2.8	0.6	1.0	7.0	10.5	6.6	17.1	8.7	0.9		2.3
42002	26.0N	093.5W	0.6	0.2	1.1	1.3	0.8	0.2	0.1	0.1	3.1	5.2	3.5	11.8	3.0	0.1	0.1	0.9	8.6	7.8	3.7	27.3	6.0	0.6	0.6	2.2
42003	26.0N	086.0W	1.1	0.4	0.4	0.5	0.1	0.4	1.1	0.5	3.2	1.3	7.8	9.4	1.8	1.7	1.0	2.1	7.1	6.6	12.9	21.0	4.9	1.6	0.2	6.0
42036	28.7N	095.3W		0.6		0.4		0.6		0.3	2.8	3.3	4.9	10.0	4.3	1.6	0.6	2.4	12.1	5.1	7.8	18.7	5.5	1.6	0.5	4.4
42010	29.7N	093.4W	0.1	0.2	0.5			0.2		0.4	6.0	3.2	7.6	5.9	3.1	2.5	1.5	2.1	9.7	7.4	8.7	15.5	8.6	1.9	1.3	1.9
42011	29.6N	093.5W		0.3							4.0	4.9	5.4	8.9	5.3	4.1	1.8	2.3	9.0	6.9	7.0	16.6	8.1	2.5	0.9	2.7
44003	40.8N	068.5W	0.2	0.1	0.3	0.2	0.2	0.2	0.2	0.1	1.5	1.4	1.4	1.9	0.6	2.4	3.6	1.9	11.7	1.0	0.4	5.6	4.3	6.7	11.6	16.6
44005	42.7N	068.3W	0.2	0.1	0.3	0.6		0.1		<.05	0.8	1.3	0.9	1.2	0.5	1.9	1.8	1.2	6.5	2.4	0.6	2.3	1.8	6.2	5.4	6.9
44006	36.3N	075.4W	0.3	0.2	0.7	0.3	0.5	0.2		0.7	3.4	3.0	1.0	0.8	2.9	2.9	1.8	2.0	12.1	4.5	4.4	4.1	11.2	10.2	8.4	5.8
46002	42.5N	130.0W	1.0	0.9	0.7	0.5	0.1		0.5	0.3	4.7	3.2	0.2	1.0	3.3	5.3	2.6	5.9	12.0	2.4	1.0	<.05	2.6	13.5	10.3	9.9
46003	52.0N	156.0W	0.1	<.05	0.4			0.1	0.1	0.2	0.9	1.5	2.5	0.8	1.4	1.7	1.8	1.7	1.3	2.7	6.3	5.5	9.7	9.1	4.9	2.3
46004	51.0N	136.0W	0.3								1.8	0.3	0.5	0.1	2.1	1.9	1.6	1.5	8.6	1.7	0.7	1.3	6.6	16.1	12.2	7.9
46005	46.0N	131.0W		0.1	0.2	<.05		0.4	0.1		0.6	0.2		0.4	1.2	1.5	2.2	0.6	2.7		0.1	0.6	2.6	16.6	13.7	13.0
46006	40.7N	137.7W	0.2	0.6	0.4	0.1	0.1		0.1	0.1	0.5	0.6	2.0	3.0	3.7	1.5	1.2	1.6	1.9	1.9	2.5	5.5	11.2	7.8	3.7	5.4
46010	46.2N	124.2W	0.1	0.9	1.1	0.5	0.5	0.4	0.6	0.6	1.1	2.1	5.6	5.2	1.7	4.4	6.9	3.2	1.8	0.3	6.3	6.2	7.5	12.9	7.9	10.7
46012	37.4N	122.7W	0.9	1.0	0.8	0.7	0.5	0.2	0.3	0.5	12.0	6.8	4.5	1.5	0.4	0.7	1.7	7.0	13.4	12.7	0.2	2.0	5.9	2.4	3.9	15.1
46013	38.2N	123.3W	2.7	2.7	1.5	0.9	0.3	0.2	1.8	2.6	2.6	3.5	11.5	2.7	2.5	1.5	1.7	11.0	0.3	2.8	6.4	2.2	2.7	1.2	6.0	21.4
46014	39.2N	124.0W	0.5	0.3	1.1	0.6	0.3	0.1		0.1	9.4	5.9	8.8	7.5	3.2	1.0	1.6	2.0	22.9	0.9	1.5	3.7	4.5	1.4	3.2	5.9
46016	63.3N	170.3W	0.5	0.5	1.6	0.1	0.4	0.5	0.5	0.5	1.1	8.0	5.9	3.3	1.9	6.0	5.3	0.5	0.9	8.0	8.3	12.7	0.4	1.3	3.3	1.9
46017	60.3N	172.3W	0.8	1.1	1.2	1.8	0.8	1.3		0.4	1.1	4.3	4.2	6.9	2.8	2.6	1.7	1.8	3.0	5.6	7.1	7.3	4.6	3.6	2.0	0.2
46019	57.2N	170.3W			0.4	3.4	1.1	2.0	0.7	0.1	0.8	0.5	2.6	2.9	4.2	6.3	4.3	0.9	3.0	4.7	6.3	5.9	4.9	4.6	9.3	4.6
46020	55.9N	168.0W				1.2					1.2	1.2	1.2	5.8	6.7	4.4	5.2	5.8		8.7	7.0	14.8	8.7	4.4	13.1	6.1
46021	57.7N	160.0W									1.4	6.7	3.4	3.8		1.9		7.8	1.4	17.3		12.0	5.3	3.8	14.4	3.4
46022	40.8N	124.5W	0.7	1.2	0.6	1.3	0.3	0.3	0.3	0.1	3.3	1.2	1.7	10.1	5.8	2.8	1.7	0.8	23.3	3.2	0.6	14.9	9.1	2.8	2.7	2.4
51001	23.4N	162.3W	1.4	1.1	1.4	0.6	0.7	0.6	1.2	0.8	5.9	2.2	3.9	4.6	5.6	1.0	1.9	5.0	6.7	5.0	6.9	7.2	15.8	4.6	2.9	4.2

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BUOY	LAT	LONG	% FREQUENCY OF WIND SPEEDS (22- 33 KTS) N	NE	E	SE	S	SW	W	NW	% FREQUENCY OF WIND SPEEDS (34-47 KTS) N	NE	E	SE	S	SW	W	NW	% FREQUENCY OF WIND SPEEDS (>47 KTS) N	NE	E	SE	S	SW	W	NW
41001	34.7N	072.3W	4.7	0.9	0.1	2.2	9.6	1.4	11.4	8.6	1.1	0.2		0.9	1.3	0.1	1.5	0.2						0.1		
41002	32.3N	075.3W	2.2	<.05	0.1	0.9	5.9	3.3	10.2	5.3					0.2	0.1	0.7									
41003	30.3N	080.4W					0.7	0.7	0.5	0.2																
41004	32.6N	078.7W	0.5	0.8				1.0	5.1	1.8						<.05	0.1									
41005	31.7N	079.7W	0.4	1.1			0.4	2.0	5.9	2.1						0.1	0.2									
42001	25.9N	089.7W	2.3	1.6		3.5	2.5	0.1		2.0								0.8								
42002	26.0N	093.5W	3.9	0.9		2.6	0.5		0.1	2.9								0.1								
42003	26.0N	086.0W	0.4		0.1	1.1	2.2	0.6	1.0	1.5																
42036	28.7N	095.3W	6.2	1.2					0.6	4.6																
42010	29.7N	093.4W	5.4	2.7	0.7	0.3			1.1	1.7																
42011	29.6N	093.5W	3.7	2.8	0.4	0.1	0.2		0.9	1.4																
44003	40.8N	068.5W	0.5	0.1		0.1	2.2		7.2	15.9																
44005	42.7N	068.3W	7.0	0.7	1.0	2.6	2.8	4.4	18.4	13.6	0.2		0.1	0.3	1.3		1.3	2.9								
44006	36.3N	075.4W	4.8	<.05	0.1	1.5	2.0	0.1	6.0	4.3																
46002	42.5N	130.0W	0.8				2.0	3.2	5.5	6.2								0.1								
46003	52.0N	156.0W	0.2	4.7	0.9	4.5	4.9	5.4	10.6	2.0		5.6	0.1	1.0	0.2	0.3	2.1	2.5								
46004	51.0N	136.0W	4.1	0.1		0.3	5.0	14.7	8.0	2.9																
46005	46.0N	131.0W	0.1		0.7	0.6	2.7	11.3	13.1	10.9	0.1					1.1	1.5	0.8								
46006	40.7N	137.7W	4.0	0.7	4.8	1.4	6.1	7.7	1.8	16.6							0.1	1.2								
46010	46.2N	124.2W	0.1			0.7	2.9	6.2	0.9	0.5																
46012	37.4N	122.7W				1.5	1.9		0.2	0.5				0.2	0.6											
46013	38.2N	123.3W				2.0	0.8	0.1	0.9	3.3					0.1											
46014	39.2N	124.0W	4.7	0.1		3.4	1.1	0.1	3.4	3.5				0.1												
46016	63.3N	170.3W	1.1	6.4	9.0	6.6	0.5					1.6		0.1	0.9											
46017	60.3N	172.3W	3.2	14.8	5.5	2.6	2.7	0.4	2.1		0.4		0.4	1.7												
46019	57.2N	170.3W	2.1	14.2	5.2	2.2	1.0	0.4	0.8	0.1																
46020	55.9N	168.0W				3.5	0.9	0.3																		
46021	57.7N	160.0W	1.9	7.7				1.9	1.9	7.7																
46022	40.8N	124.5W	1.3				6.2	1.1		0.3																
51001	23.4N	162.3W		1.4	3.1	0.2	1.2	0.9	0.4	1.0																

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BUOY	LAT	LONG	AIR TEMPERATURE (DEG C) OBS	DAYS	MAX	DY HR	MIN	DY HR	MEAN	SEA TEMPERATURE (DEG C) OBS	DAYS	MAX	DY HR	MIN	DY HR	MEAN	AIR-SEA TEMPERATURE DIFFERENCE (DEG C) OBS	DAYS	MAX	DY HR	MIN	DY HR	MEAN
41001	34.7N	072.3W	665	28	22.4	25 08	07.8	26 10	15.7	665	28	22.4	06 18	20.0	06 02	21.0	666	28	01.7	25 09	-12.6	26 10	-05.2
41002	32.3N	075.3W	669	28	22.9	09 21	10.0	22 13	18.9	669	28	23.1	05 17	18.6	26 06	21.1	669	28	02.8	25 11	-10.3	22 13	-02.2
41004	32.6N	078.7W	668	28	22.0	03 05	08.8	13 12	15.2	668	28	21.7	28 23	14.8	13 21	18.6	668	28	04.3	02 21	-12.1	28 14	-03.4
42001	25.9N	089.7W	669	28	25.9	05 22	19.5	28 08	23.5	670	28	24.1	05 11	20.5	04 11	22.3	670	28	03.5	02 15	-03.0	28 08	01.3
42002	26.0N	093.5W	670	28	24.6	09 18	14.6	27 20	20.9	670	28	24.5	17 21	21.0	10 11	22.5	670	28	01.4	09 18	-07.6	28 00	-01.6
42003	26.0N	086.0W	671	28	26.7	06 20	19.6	14 09	24.2	671	28	28.0	20 20	26.1	07 14	27.0	671	28	-00.3	10 23	-07.4	14 09	-07.8
42007	30.1N	088.9W	426	19	19.5	24 20	05.5	13 16	13.8	426	19	17.4	24 20	12.4	14 13	14.4	427	19	03.7	16 08	-07.1	13 16	-00.5
42036	28.7N	095.3W	663	28	19.2	15 18	00.1	06 11	11.9	667	28	17.0	24 00	10.9	11 11	13.0	669	28	07.6	15 18	-11.8	06 11	-01.1
42010	29.7N	093.4W	661	28	20.1	21 20	00.0	10 16	10.8														
42011	29.6N	093.5W	639	28	19.6	24 22	00.0	10 16	11.0														
44003	40.8N	068.5W	529	26	10.6	01 15	00.0	07 07	03.4	670	28	04.7	04 03	03.5	15 07	04.2	670	28	06.0	01 15	-04.6	07 07	-01.4
44005	42.7N	068.3W	327	22	10.1	01 13	00.0	13 16	03.4	515	22	05.9	14 20	04.2	21 15	04.9	671	28	04.6	04 03	-05.9	14 20	-02.9
44006	36.3N	075.4W	638	28	13.1	03 01	00.0	26 15	06.0	642	28	07.6	21 18	04.6	03 14	05.9	643	28	07.8	04 10	-06.1	07 17	00.0
44007	43.5N	070.1W	368	08	03.5	20 23	00.0	20 14	01.5	286	13	04.4	23 19	03.0	25 06	03.5	286	13	-00.2	20 23	-04.4	23 18	-02.7
46001	56.0N	148.0W	390	18	07.0	07 14	00.0	12 21	03.5	652	28	04.2	05 01	03.2	27 11	03.8	652	28	02.9	07 14	-03.9	12 21	-01.5
46002	42.5N	130.0W	669	28	13.3	15 08	06.7	22 21	09.7	669	28	11.5	02 23	10.4	27 07	10.9	669	28	02.5	20 06	-04.5	22 21	-01.2
46003	52.0N	156.0W	481	24	06.4	03 11	00.0	11 23	03.2	660	28	05.4	08 02	04.0	20 15	04.6	660	28	01.3	03 11	-04.7	11 23	-02.2
46005	46.0N	131.0W	671	28	10.6	18 12	01.5	23 05	07.3	671	28	10.5	07 23	09.6	23 10	10.1	671	28	00.4	18 12	-08.2	22 20	-02.7
46006	40.7N	137.7W	653	28	15.7	13 22	06.6	26 08	11.4	665	28	11.8	08 23	11.0	21 16	11.4	665	28	04.1	13 22	-04.5	20 01	00.0
46010	46.2N	124.2W	669	25	12.0	20 11	01.6	09 16	07.4	669	28	12.3	16 23	08.3	10 07	10.9	669	28	-00.3	20 11	-09.3	22 23	-03.4
46013	38.2N	123.3W	668	28	14.0	16 06	08.1	05 16	11.3	668	28	13.4	20 00	10.3	25 15	12.0	668	28	02.1	16 06	-04.3	05 16	-00.6
46014	39.2N	124.0W	667	28	14.4	16 01	07.9	10 15	11.2	667	28	13.4	19 22	11.1	10 17	12.0	668	28	02.8	28 19	-03.8	06 15	-00.8
46016	63.3N	170.3W	015	04	01.0	03 18	00.1	03 00	00.5														
46017	60.3N	172.3W	040	10	03.7	07 03	00.1	02 00	01.2														
46019	57.2N	170.3W	136	24	06.4	07 00	00.1	01 00	02.2														
46020	55.9N	168.0W	139	23	05.3	06 21	00.2	27 15	02.4	186	24	04.2	06 15	02.6	18 15	03.3	186	24	01.1	06 21	-03.5	10 06	-01.8
46022	40.8N	124.5W	668	26	14.5	20 08	06.6	23 17	10.5	668	28	12.0	17 21	10.0	08 18	11.0	668	28	03.1	28 21	-04.3	23 17	-00.5
51001	23.4N	162.3W	668	28	24.6	17 20	18.8	18 05	22.2	669	28	25.0	01 02	23.4	26 12	24.1	668	28	00.7	17 17	-05.2	18 16	-01.8

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BUOY	LAT	LONG	PRESSURE (MB) OBS	DAYS	MAX	DY HR	MIN	DY HR	MEAN	WIND SPEEDS (KNOTS) OBS	MAX	DY HR	DIR	MEAN WIND SPEED (KNOTS) N	NE	E	SE	S	SW	W	NW	TOTAL
41001	34.7N	072.3W	665	28	1036.3	26 16	996.6	21 20	1019.5	665	44	13 13	230	19.6	15.8	16.8	19.9	23.3	19.9	16.9	21.0	19.8
41002	32.3N	075.3W	669	28	1032.6	26 17	999.9	21 20	1020.1	667	36	13 08	210	14.5	14.4	15.7	16.5	17.8	17.7	16.1	17.6	16.6
41004	32.6N	078.7W	668	28	1030.8	26 16	1000.6	21 22	1019.5	668	29	26 20	040	13.7	16.3	9.1	12.1	13.2	11.5	12.7	11.6	13.4
42001	25.9N	089.7W	670	28	1025.9	07 17	1010.0	17 21	1018.6	662	24	13 03	010	14.3	14.4	10.3	11.3	12.8	9.5	7.3	12.6	12.4
42002	26.0N	093.5W	670	28	1027.5	07 03	1008.7	17 22	1018.2	669	26	09 22	010	16.1	14.7	12.2	12.6	7.8	4.9	5.8	13.0	12.9
42003	26.0N	086.0W	671	28	1025.3	07 16	1009.2	17 09	1018.7	669	22	03 10	160	11.4	10.6	10.6	13.7	11.6	10.1	12.9	13.3	11.7
42007	30.1N	088.9W	426	19	1028.4	13 16	1008.1	17 10	1019.4	410	25	26 17	110	12.6	12.2	12.8	10.8	7.7	8.1	8.2	11.2	10.5
42008	28.7N	095.3W	661	28	1035.6	06 17	1007.5	16 00	1021.1	669	30	09 13	340	17.4	15.3	13.6	9.3	9.1	7.0	8.0	15.9	14.1
42010	29.7N	093.4W	665	28	1032.0	06 16	1007.2	17 23	1020.3	661	30	09 13	360	15.6	12.7	11.0	9.5	7.8	10.3	7.5	12.0	12.2
42011	29.6N	093.5W	642	28	1031.6	06 18	1006.5	17 23	1019.5	635	29	09 13	350	17.5	12.9	11.8	9.3	8.8	9.7	8.5	11.7	12.7
44003	40.8N	068.5W	670	28	1040.3	02 15	982.2	20 17	1018.3	666	30	20 17	360	16.3	13.7	13.3	12.0	14.3	16.6	15.7	17.1	15.4
44005	42.7N	068.3W	671	28	1042.2	02 15	996.4	20 18	1018.4	670	36	25 23	290	20.2	19.9	13.9	13.4	18.5	22.8	21.0	21.7	19.9
44006	36.3N	075.4W	639	28	1039.8	26 16	998.2	21 18	1020.8	632	31	25 13	360	16.8	13.6	12.7	11.8	13.1	9.3	8.9	15.6	14.2
44007	43.5N	070.1W	286	13	1032.8	18 16	1000.9	21 17	1017.3	284	27	24 11	320	14.6	11.2	2.0	1.8	4.5	7.3	12.1	17.6	13.8
46001	56.0N	148.0W	652	28	1041.5	07 04	978.5	16 05	1011.6													
46002	42.5N	130.0W	669	28	1035.7	01 18	986.0	28 23	1016.9	666	32	28 13	150	11.1	12.3	5.1	17.3	19.4	17.2	13.7	13.7	14.9
46003	52.0N	156.0W	660	28	1044.0	07 10	994.8	16 02	1017.3	330	38	03 11	150	17.1	23.9	14.1	16.4	23.9	13.8	4.5	15.2	17.8
46005	46.0N	131.0W	671	28	1034.3	01 19	982.5	28 23	1013.7	668	40	19 09	180	13.8	13.0	10.2	17.7	20.5	18.6	15.8	12.5	16.7
46006	40.7N	137.7W	665	28	1035.3	22 07	979.1	28 16	1016.3	665	41	20 01	010	14.5	16.2	18.9	19.5	21.5	23.0	18.6	16.2	19.2
46010	46.2N	124.2W	669	28	1034.8	01 08	991.8	15 14	1018.1	667	34	18 17	180	8.5	7.3	13.1	12.4	18.6	14.5	12.4	11.1	14.7
46013	38.2N	123.3W	668	28	1027.2	01 18	1011.4	04 05	1020.7	649	34	22 10	320	6.6	5.9	9.0	11.8	12.7	8.5	5.6	16.2	12.5
46014	39.2N	124.0W	667	28	1027.9	01 19	1010.1	15 23	1019.8	397	31	26 19	160	18.6	6.4	6.1	11.3	15.6	6.5	6.9	18.5	14.8
46016	63.3N	170.3W	043	06	1023.8	05 12	992.5	03 18	1006.5	043	28	03 21	170		12.3	13.5	17.3	20.2	18.3	13.7		15.7
46017	60.3N	172.3W	219	28	1047.5	09 06	988.5	02 00	1022.5	153	33	22 15	130	14.8	10.9	7.7	16.2	12.6	7.6	4.1	5.1	12.6
46019	57.2N	170.3W	223	28	1047.2	09 00	981.5	01 15	1021.3	220	37	22 21	130	19.7	17.4	13.4	15.9	12.5	11.9	10.1	13.2	15.6
46020	55.9N	168.0W	224	28	1044.5	09 00	980.2	01 12	1018.4	213	33	22 18	110	16.9	13.5	17.6	16.2	15.1	14.8	14.2	15.7	15.9
46022	40.8N	124.5W	668	28	1031.1	01 19	1003.6	16 00	1019.8	645	31	13 16	180	14.9	10.5	3.1	7.7	18.5	11.9	4.6	6.8	13.9
51001	23.4N	162.3W	668	28	1021.1	20 09	999.3	11 04	1012.7	666	32	11 22	250	17.2	15.5	13.3	9.1	14.4	19.4	16.8	18.0	16.2

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BUOY	LAT	LONG	OBS	MAX	DY	HR	MEAN	<1M	1-1.5M	2-2.5M	3-3.5M	4-5.5M	6-7.5M	8-9.5M	>9.5M
			WAVE HEIGHTS (METERS)					FREQUENCY OF WAVE HEIGHTS (%)							
41001	34.7N	072.3W	664	5.5	18	16	2.8		12.3	37.6	29.8	20.3			
41002	32.3N	075.3W	668	5.2	23	05	2.4		14.9	55.7	24.7	4.9			
41004	32.6N	078.7W	668	4.5	26	16	1.9	1.9	46.3	35.1	11.5	2.9			
42001	25.9N	089.7W	670	3.0	01	05	1.1	23.8	59.4	16.4	0.2				
42002	26.0N	093.5W	655	3.5	13	01	1.4	6.0	68.5	21.5	3.6				
42003	26.0N	086.0W	671	3.3	04	09	1.1	23.3	60.2	15.9	0.4				
44003	40.8N	068.5W	669	6.0	26	18	2.4		26.1	39.1	23.7	8.5	0.4		
44005	42.7N	068.3W	671	5.5	02	00	2.1	3.2	37.1	32.3	17.4	9.8			
44007	43.5N	070.1W	284	2.5	21	11	0.9	36.6	55.9	7.3					
46001	56.0N	148.0W	676	6.5	09	21	3.2		3.7	36.1	30.1	27.5	2.3		
46002	42.5N	130.0W	669	7.5	26	22	2.8		19.1	27.9	28.5	23.4	0.8		
46005	46.0N	131.0W	671	6.5	26	21	2.9		21.6	20.5	32.9	24.4	0.4		
46006	40.7N	137.7W	656	6.5	19	14	2.9		13.1	35.9	25.1	25.4	0.3		
46010	46.2N	124.2W	663	6.0	15	17	2.5	4.7	20.5	19.4	35.5	15.5	0.1		
46013	38.2N	123.3W	666	4.3	16	12	1.8	10.2	39.7	31.0	18.6	0.3			
46014	39.2N	124.0W	667	4.5	24	03	2.2	8..	26.1	28.7	30.8	4.3			
46022	40.8N	124.5W	663	4.3	01	07	2.3	6.4	20.3	29.8	40.7	2.5			
51001	23.4N	162.3W	665	7.5	12	05	3.3			29.3	47.2	19.6	3.7		

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BUOY	LAT	LONG	CALM	<4KT	4-10KT	11-21KT	22-33KT	34-47KT	>47KT	N	NE	E	SE	S	SW	W	NW
			TOTAL FREQUENCY OF WIND SPEEDS (%)							TOTAL FREQUENCY OF WIND DIRECTIONS (%)							
41001	34.7N	072.3W		3.2	9.8	47.8	41.1	1.2		19.6	9.6	5.9	6.7	19.1	10.9	5.7	18.4
41002	32.3N	075.3W		3.3	13.3	66.6	19.6	0.1		11.4	8.7	7.7	14.5	16.3	13.5	11.2	16.6
41004	32.6N	078.7W		2.8	28.6	58.5	10.0			15.7	28.7	7.9	3.7	10.6	10.5	12.5	10.5
42001	25.9N	089.7W		3.8	31.9	61.2	3.2			12.6	29.0	19.9	16.6	9.8	4.2	2.2	5.3
42002	26.0N	093.5W		3.3	24.8	70.0	1.9			16.3	17.2	19.5	27.3	6.9	2.8	1.9	7.2
42003	26.0N	086.0W		5.2	33.6	61.0	0.1			12.7	17.5	24.9	18.8	10.1	4.4	2.7	9.0
42007	30.1N	088.9W		4.6	49.0	44.1	2.2			19.4	12.6	13.5	9.0	13.1	15.6	9.9	6.9
42008	28.7N	095.3W		1.6	28.8	57.0	12.6			24.8	27.8	13.4	9.8	6.5	4.8	2.1	10.8
42010	29.7N	093.4W	2.0	3.6	39.6	50.4	6.4			26.4	27.3	14.9	12.7	6.8	4.8	2.8	4.3
42011	29.6N	093.5W		3.0	37.5	51.7	7.9			22.2	22.1	13.6	12.7	6.4	5.5	1.9	5.6
44003	40.8N	068.5W		0.8	18.8	70.7	9.6			18.1	11.7	12.5	6.6	5.0	3.9	17.5	24.7
44005	42.7N	068.3W		1.2	8.5	47.2	41.0	2.1		19.0	13.2	4.7	8.0	7.6	7.5	18.1	21.8
44006	36.3N	075.4W		2.1	27.7	58.7	11.0			27.3	19.9	6.8	5.7	17.9	3.4	4.0	15.0
44007	43.5N	070.1W		6.0	19.7	66.9	7.4			45.2	11.5	0.6	0.5	2.6	5.3	11.3	23.0
46002	42.5N	130.0W		4.7	21.8	61.6	12.0			9.2	16.5	4.7	3.3	18.5	25.4	12.6	9.9
46003	52.0N	156.0W		3.3	19.7	41.8	33.3	1.8		19.0	16.5	12.5	32.1	7.0	1.5	1.0	10.3
46005	46.0N	131.0W		0.4	21.7	51.8	24.1	1.9		10.0	5.2	1.9	3.7	14.0	32.8	23.1	9.4
46006	40.7N	137.7W		0.8	9.3	55.0	32.6	2.3		8.0	11.2	4.5	11.5	13.3	22.0	13.8	11.7
46010	46.2N	124.2W		1.6	19.9	67.3	10.9	0.1		1.3	2.9	21.3	9.9	35.4	12.6	7.8	8.8
46013	38.2N	123.3W		7.9	37.9	41.1	12.9	0.7		1.6	2.3	15.9	9.9	10.6	7.3	7.0	45.4
46014	39.2N	124.0W		5.5	33.8	33.8	27.0			34.3	5.9	9.2	11.8	10.1	3.7	2.6	22.4
46016	63.3N	170.3W			23.3	67.4	9.3				9.3	32.0	40.7	6.4	5.8	5.8	
46017	60.3N	172.3W		8.5	41.2	35.3	15.0			23.4	10.0	16.2	21.0	8.5	4.9	1.8	4.2
46019	57.2N	170.3W		5.5	21.4	52.3	19.1	1.4		14.0	14.8	9.9	39.4	9.2	6.0	3.8	3.0
46020	55.9N	168.0W			9.9	86.4	3.6			13.4	20.1	25.5	21.0	5.6	1.5	3.4	9.5
46022	40.8N	124.5W		7.6	27.4	50.7	14.3			32.4	6.1	1.2	13.3	32.6	8.8	1.0	4.4
51001	23.4N	162.3W		2.6	15.5	66.7	15.3			14.8	17.5	9.6	4.4	12.1	14.7	13.8	13.3

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BUOY	LAT	LONG	N	NE	E	SE	S	SW	W	NW	N	NE	E	SE	S	SW	W	NW	N	NE	E	SE	S	SW	W	NW
			% FREQUENCY OF WIND SPEEDS (<4 KTS)								% FREQUENCY OF WIND SPEEDS (4-10 KTS)								% FREQUENCY OF WIND SPEEDS (11-21 KTS)							
41001	34.7N	072.3W		0.7							1.5	1.9	2.6	0.8	0.3	0.7	0.7	1.7	10.3	5.9	4.3	3.0	6.6	5.6	4.5	7.6
41002	32.3N	075.3W	0.1							0.1	2.2	2.3	1.5	2.0	0.9	0.9	1.7	1.8	7.8	5.7	4.9	9.0	12.4	9.4	6.9	10.4
41004	32.6N	078.7W	0.5	0.1	0.3		0.3	0.6	0.7	0.2	4.6	3.6	5.4	1.9	2.8	7.8	2.5	4.1	8.8	18.5	2.2	1.0	6.9	6.7	9.1	5.9
42001	25.9N	089.7W	0.5	0.9	0.9	0.5		0.2	0.3	0.5	2.1	5.9	9.5	6.4	3.2	2.4	1.4	1.0	9.0	20.7	9.5	9.7	6.2	1.6	0.5	3.9
42002	26.0N	093.5W					1.2	1.7	0.7		2.7	1.6	5.3	6.7	4.1	1.7	0.9	2.7	14.6	15.4	13.2	20.6	1.5	0.2	0.3	4.1
42003	26.0N	086.0W	1.0	0.7	1.3	0.9	0.7	0.4		0.2	4.1	7.3	11.1	4.1	3.4	1.9	0.5	1.1	7.6	9.5	12.4	13.8	5.6	2.0	2.1	7.7
42007	30.1N	088.9W	0.4	0.3	0.2	0.1	0.7	1.5	1.3	0.1	4.6	4.8	4.9	4.6	10.4	11.0	5.8	7.8	13.8	7.2	7.5	3.9	2.0	3.0	2.8	3.9
42008	28.7N	095.3W	0.1	0.7			0.1	0.6		0.5	3.3	3.7	3.0	6.7	4.6	3.4	1.7	7.4	14.5	21.3	9.6	3.1	1.8	0.7	0.4	5.5
42010	29.7N	093.4W	1.1	0.8	0.9	0.6			0.2		4.0	6.4	6.6	7.6	6.1	2.6	2.4	2.0	17.1	16.1	7.4	4.4	0.8	2.2	0.2	2.1
42011	29.6N	093.5W	0.1	1.8	0.1	0.5		0.2		0.3	2.2	4.3	5.8	8.7	4.8	3.0	1.5	7.6	15.6	17.7	7.6	3.9	1.6	2.4	0.4	2.6
44003	40.8N	068.5W	0.2	0.2						0.5	3.2	4.1	2.9	2.1	0.8	0.5	2.6	2.8	12.2	6.9	9.5	4.5	4.1	3.7	13.8	16.7
44005	42.7N	068.3W	0.3		0.1	<.05	0.4	0.2	0.1		1.4	1.1	1.1	2.4	0.7		0.5	1.3	7.4	7.3	2.8	4.9	3.5	2.4	9.4	9.4
44006	36.3N	075.4W		0.2		0.5	0.3	0.7	0.4		4.2	6.7	3.1	1.6	5.5	1.7	1.6	4.1	17.8	12.0	2.9	3.2	11.1	1.6	1.7	8.3
44007	43.5N	070.1W	0.6	1.1	0.6	0.4	0.9	1.1	0.4	0.8	4.6	7.3		0.1	1.7	3.5	4.4	1.9	39.5	7.1				0.6	6.3	13.4
46002	42.5N	130.0W	0.4	0.7	1.5	1.2	0.2	0.4	0.3	0.3	4.2	5.9	2.9	0.1	0.9	1.7	3.4	3.2	4.6	10.2	0.3	0.3	11.6	20.5	8.6	5.5
46003	52.0N	156.0W	0.2	0.1	0.3	1.2	0.6	0.4	0.2	0.3	2.3	1.0	4.2	7.3	1.1	0.4	0.8	7.7	12.0	3.6	4.9	14.1	0.2	0.4		6.6
46005	46.0N	131.0W	0.1			0.1	0.1				2.6	1.5	1.0	0.9	2.5	3.7	5.8	4.3	6.7	3.7	0.9	1.0	4.2	18.5	12.7	4.1
46006	40.7N	137.7W	0.7	<.05							3.1	1.5	0.4	0.2	0.2	0.6	1.5	1.6	2.1	5.2	5.9	7.7	6.2	7.0	8.8	9.0
46010	46.2N	124.2W		0.3	0.1	0.2	0.3		0.3	0.4	0.7	2.4	4.5	2.2	1.3	2.5	2.7	3.6	0.6	0.2	16.7	7.2	24.1	9.4	4.5	4.7
46013	38.2N	123.3W		0.7	1.5	1.0	0.3	1.1	1.9	1.8	1.5	2.0	9.7	2.7	3.0	3.9	4.7	10.4	0.1	<.05	4.7	6.0	6.8	2.4	0.4	20.7
46014	39.2N	124.0W		1.1	1.3	1.8		0.5		0.8	3.7	4.2	7.4	4.7	3.6	3.1	2.6	4.5	17.7	3.6	0.5	3.8	4.0			7.1
46016	63.3N	170.3W										2.9	12.8	3.5	1.7	0.6	1.7			6.4	16.9	37.6	2.3	5.2	4.1	
46017	60.3N	172.3W		0.7	0.7	2.1	0.5	1.5	1.1	2.0	7.2	4.6	12.3	8.7	3.4	2.1	0.7	2.3	12.9	7.8	3.3	10.9	4.1	1.3		
46019	57.2N	170.3W	0.3	0.9		1.9	1.7	0.5		0.1		1.1	5.0	8.9	1.1	2.7	2.5	0.6	6.6	8.0	4.9	20.7	5.7	3.0	1.3	2.3
46020	55.9N	168.0W									1.4	6.2	0.8	1.4					12.0	13.8	21.6	18.9	5.6	1.5	3.4	9.5
46022	40.8N	124.5W	0.8	0.1	0.8	2.7	0.6	1.7	0.6	0.8	6.6	3.3	0.4	7.5	3.5	2.4	0.3	3.1	22.2	2.7		2.9	18.2	4.0	0.1	0.6
51001	23.4N	162.3W	0.3	0.3	0.5	0.5	0.5	0.2	0.2	0.2	1.1	2.9	2.9	2.3	2.1	1.7	1.9	0.6	11.9	13.2	5.4	1.6	8.7	6.0	9.3	10.7

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BUOY	LAT	LONG	N	NE	E	SE	S	SW	W	NW	N	NE	E	SE	S	SW	W	NW	N	NE	E	SE	S	SW	W	NW
			% FREQUENCY OF WIND SPEEDS (22- 33 KTS)								% FREQUENCY OF WIND SPEEDS (34-47 KTS)								% FREQUENCY OF WIND SPEEDS (>47 KTS)							
41001	34.7N	072.3W	7.6	1.9	2.9	2.6	11.6	4.2	0.5	9.4	0.2			0.2	0.4	0.3		0.2								
41002	32.3N	075.3W	1.3	0.7	1.3	7.5	2.9	3.0	2.6	4.2						0.1										
41004	32.6N	078.7W	1.8	6.3		0.5	0.6	0.2	0.1	0.3																
42001	25.9N	089.7W	1.2	1.4		0.2	0.4																			
42002	26.0N	093.5W	1.4	0.2						0.3																
42003	26.0N	086.0W				<.05	0.1																			
42007	30.1N	088.9W	0.6	0.2	0.9	0.4				0.1																
42008	28.7N	095.3W	6.9	2.5	0.7					2.5																
42010	29.7N	093.4W	4.2	2.0						0.2																
42011	29.6N	093.5W	4.3	3.3	0.2					0.1																
44003	40.8N	068.5W	2.5	0.6	0.1			0.5	1.1	5.0																
44005	42.7N	068.3W	9.7	4.6	0.6	0.7	3.2	4.9	7.6	9.9	0.2	0.7					0.4	1.3								
44006	36.3N	075.4W	5.3	1.6	0.8	0.4	0.9			2.7																
44007	43.5N	070.1W	0.3						0.3	6.9																
46002	42.5N	130.0W				1.7	6.0	3.0	0.4	0.9																
46003	52.0N	156.0W	4.5	11.8	3.0	5.9	4.0	0.4		0.8				0.7	1.1											
46005	46.0N	131.0W	0.6			1.5	5.5	11.1	4.5	1.0				0.2	1.6	0.1										
46006	40.7N	137.7W	1.6	1.0	2.2	3.4	6.5	14.0	2.8	1.0	0.4	0.2		0.2	0.3	0.5	0.7									
46010	46.2N	124.2W				0.2	9.6	0.7	0.3	0.1					0.1											
46013	38.2N	123.3W				0.2	0.4	<.05		12.3								0.2								
46014	39.2N	124.0W	12.9			1.6	2.5			10.0																
46016	63.3N	170.3W			2.3	4.7	2.3																			
46017	60.3N	172.3W	3.3	2.0		9.3	0.5																			
46019	57.2N	170.3W	7.3	4.8		6.1	0.7	0.5						1.8												
46020	55.9N	168.0W			3.1	0.7																				
46022	40.8N	124.5W	2.5	0.1		0.2	10.4	0.7																		
51001	23.4N	162.3W	1.5	1.1	0.7		0.8	6.8	2.4	2.0																

MARCH 1982			AIR TEMPERATURE (DEG C)							SEA TEMPERATURE (DEG C)							AIR-SEA TEMPERATURE DIFFERENCE (DEG C)						
BUOY	LAT	LONG	OBS	DAYS	MAX	DY HR	MIN	DY HR	MEAN	OBS	DAYS	MAX	DY HR	MIN	DY HR	MEAN	OBS	DAYS	MAX	DY HR	MIN	DY HR	MEAN
41001	34.7N	072.3W	740	31	22.2	07 22	07.6	28 15	16.8	740	31	22.8	02 07	19.7	28 11	20.9	741	31	01.8	07 22	-12.2	28 15	-04.1
41002	32.3N	075.3W	741	31	25.2	21 18	13.5	28 19	19.7	741	31	25.9	16 17	18.8	03 16	22.0	741	31	02.6	07 21	-09.1	29 00	-02.3
41004	32.6N	078.7W	740	31	23.8	07 17	06.8	08 16	17.7	740	31	23.8	26 01	19.1	22 14	21.3	741	31	02.4	18 01	-13.6	27 16	-03.6
42001	25.9N	089.7W	744	31	26.4	31 22	16.4	07 15	24.0	744	31	24.5	22 19	20.4	09 09	22.7	744	31	03.6	10 14	-04.3	07 15	01.3
42002	26.0N	093.5W	728	31	25.9	25 18	14.0	07 14	22.3	728	31	26.4	25 19	21.7	08 12	23.7	729	31	01.5	05 21	-09.0	07 14	-01.3
42003	26.0N	086.0W	742	31	27.5	16 23	17.0	08 19	24.1	742	31	27.9	17 20	26.1	11 11	27.0	742	31	00.1	16 23	-10.0	08 19	-03.0
42007	30.1N	088.9W	735	31	26.4	16 18	03.8	08 10	17.0	735	31	24.3	21 01	14.1	09 07	19.8	735	31	03.6	18 18	-11.1	08 10	-01.4
42008	28.7N	095.3W	681	31	21.9	21 23	04.3	06 20	16.9	681	31	27.5	21 23	13.4	01 09	17.0	682	31	03.6	13 04	-10.1	06 20	-00.1
42010	29.7N	093.4W	209	09	18.2	04 22	03.7	07 13	12.8														
42011	29.6N	093.5W	722	31	25.7	21 22	04.2	07 12	17.4														
44003	40.8N	068.5W	678	30	11.2	07 08	00.0	03 13	04.3	743	31	04.8	25 18	03.4	03 04	04.1	719	30	07.4	07 06	-04.4	28 21	00.0
44005	42.7N	068.3W	613	29	07.7	31 23	00.0	09 20	03.6	742	31	05.8	30 20	02.4	01 11	04.1	715	30	03.6	05 11	-04.7	27 17	-01.0
44006	36.3N	075.4W	706	31	16.4	17 22	00.7	28 15	07.4	706	31	09.9	12 21	05.0	01 10	06.5	706	31	09.3	17 22	-05.9	28 15	00.9
44007	43.5N	070.1W	546	26	08.3	16 21	00.0	02 15	03.3	737	31	06.3	30 19	02.8	03 11	03.8	710	30	04.2	05 21	-04.4	27 18	-01.3
45007	42.7N	087.1W	150	08	07.7	31 03	00.0	28 20	03.5	216	10	02.2	24 15	01.4	28 08	01.9	216	10	05.3	30 22	-01.9	25 17	00.7
46001	56.0N	148.0W	667	31	04.7	08 21	00.0	13 08	02.9	677	31	04.0	28 00	03.2	01 09	03.5	679	31	01.3	08 21	-03.8	28 11	-00.6
46002	42.5N	130.0W	730	31	11.9	21 01	04.7	29 07	08.4	730	31	10.9	10 23	09.5	18 13	10.0	730	31	01.9	07 16	-05.2	14 09	-01.6
46003	52.0N	156.0W	670	30	05.7	17 08	00.1	24 07	03.1	716	31	04.7	08 00	03.6	25 08	04.3	719	31	01.0	17 06	-04.0	24 00	-01.4
46004	51.0N	136.0W	729	31	07.7	01 09	00.0	26 01	04.8	730	31	06.2	27 23	05.1	13 12	05.4	730	31	02.0	01 16	-05.4	26 01	-00.7
46005	46.0N	131.0W	731	31	10.4	01 01	02.2	31 21	06.3	731	31	10.4	05 00	09.6	11 15	09.9	731	31	00.4	01 01	-07.8	31 21	-03.5
46006	40.7N	137.7W	691	31	13.5	20 23	06.3	16 08	10.0	726	31	11.2	01 01	10.4	16 13	10.8	727	31	02.5	20 23	-04.6	01 06	-01.0
46010	46.2N	124.2W	145	07	13.3	01 05	05.8	06 15	08.7	145	07	12.3	03 19	09.1	07 01	11.5	145	07	01.1	01 05	-05.3	03 01	-02.8
46011	34.9N	120.9W	504	22	15.7	11 00	08.9	17 02	11.9	503	22	14.3	11 02	12.0	29 14	12.9	504	22	01.8	27 17	-04.1	17 02	-01.0
46013	38.2N	123.3W	706	31	14.8	07 00	05.6	16 13	10.9	706	31	13.0	11 21	11.0	17 04	11.8	706	31	02.3	06 22	-05.5	16 13	-00.9
46014	39.2N	124.0W	701	31	15.6	06 22	05.5	16 07	10.6	705	31	13.7	19 22	11.0	16 15	11.9	705	31	03.2	06 22	-05.7	16 07	-01.3
46017	60.3N	172.3W	024	06	01.9	08 00	00.1	04 21	00.7														
46019	57.2N	170.3W	124	19	06.1	17 00	00.1	14 21	02.7														
46020	55.9N	168.0W	181	29	04.6	07 21	00.2	23 21	02.5	233	31	03.4	06 12	02.6	01 00	03.0	234	31	01.2	07 21	-03.1	09 18	-00.8
46022	40.8N	124.5W	700	31	13.6	01 07	05.1	28 14	09.9	700	31	11.9	24 01	10.3	28 15	11.0	700	31	02.4	01 07	-05.4	16 16	-01.0
51001	23.4N	162.3W	731	31	24.0	17 03	17.8	06 00	21.6	731	31	24.4	03 02	22.6	25 08	23.1	731	31	00.3	15 07	-05.8	06 00	-01.5

MARCH 1982			PRESSURE (MB)							WIND SPEEDS (KNOTS)				MEAN WIND SPEED (KNOTS)								
BUOY	LAT	LONG	OBS	DAYS	MAX	DY HR	MIN	DY HR	MEAN	OBS	MAX	DY HR	DIR	N	NE	E	SE	S	SW	W	NW	TOTAL
41001	34.7N	072.3W	740	31	1036.7	29 15	1006.4	22 08	1019.8	736	37	06 23	180	16.7	12.2	13.1	15.0	21.9	15.8	13.8	15.7	15.6
41002	32.3N	075.3W	741	31	1032.8	09 15	1007.9	07 22	1019.0	739	34	06 17	180	13.0	13.3	14.0	11.4	14.7	12.9	13.1	11.2	13.1
41004	32.6N	078.7W	740	31	1033.1	09 16	1002.6	07 20	1019.1	735	30	07 19	230	12.1	13.3	12.9	10.5	7.8	11.4	11.2	10.7	11.6
42001	25.9N	089.7W	744	31	1029.2	08 16	1005.1	06 22	1016.3	740	36	28 10	090	15.4	15.7	12.1	11.2	10.7	9.3	7.5	19.5	12.4
42002	26.0N	093.5W	728	31	1029.0	08 16	1004.6	05 21	1014.2	726	28	07 01	340	12.7	13.6	11.0	12.6	9.3	4.4	4.5	21.4	12.3
42003	26.0N	086.0W	742	31	1029.1	09 16	1006.2	06 23	1017.0	742	30	29 01	030	13.3	13.6	11.4	10.5	11.3	11.4	16.6	16.7	11.9
42007	30.1N	088.9W	735	31	1031.8	09 16	1006.1	06 20	1018.1	702	28	07 11	330	16.6	14.6	13.6	8.8	9.0	10.4	5.9	18.8	11.5
42008	28.7N	095.3W	681	31	1032.1	01 16	1005.6	16 00	1015.4	680	33	27 20	040	18.1	17.0	11.6	11.4	16.8	6.3	6.0	16.5	13.1
42010	29.7N	093.4W	209	09	1030.4	01 16	1007.4	04 10	1018.9	205	27	06 22	350	17.8	9.9	11.6	9.7	8.7	7.9	4.9	12.3	11.2
42011	29.6N	093.5W	721	31	1030.9	01 16	1007.9	04 10	1016.8	712	31	27 19	060	17.4	17.4	13.4	10.7	10.2	8.0	6.6	13.4	12.6
44003	40.8N	068.5W	743	31	1034.1	09 14	996.7	22 06	1017.7	736	26	07 06	210	10.4	9.3	10.3	11.1	12.0	10.8	14.4	15.7	12.5
44005	42.7N	068.3W	741	31	1034.3	09 13	994.9	22 07	1017.1	742	32	02 22	260	10.2	10.0	11.9	12.3	13.8	13.3	19.0	21.0	14.9
44006	36.3N	075.4W	706	31	1037.1	29 12	999.9	07 22	1019.9	696	29	13 03	140	14.5	13.7	11.2	13.0	13.5	13.2	12.0	15.8	13.5
44007	43.5N	070.1W	737	31	1035.0	10 16	994.7	26 20	1016.7	718	26	14 14	270	9.9	8.3	8.3	9.1	9.8	9.6	14.6	12.3	11.0
45007	42.7N	087.1W	216	10	1035.2	27 21	998.9	30 22	1018.2	215	23	30 20	160	17.1	7.2		12.5	13.1	10.4	12.5	14.8	13.1
46001	56.0N	148.0W	676	31	1026.5	22 22	979.3	12 03	1007.9													
46002	42.5N	130.0W	730	31	1029.8	22 06	986.8	01 00	1013.6	728	32	01 16	240	13.6	10.6	15.6	10.7	14.1	15.6	13.4	13.2	13.6
46003	52.0N	156.0W	715	31	1031.7	22 16	994.4	11 16	1014.7	679	45	25 02	300	17.2	16.0	13.9	15.7	19.6	17.3	20.6	26.8	20.5
46004	51.0N	136.0W	729	31	1039.2	21 21	973.3	01 09	1012.0	721	35	12 13	250	12.8	13.8	16.9	13.5	12.0	15.2	17.3	14.1	14.5
46005	46.0N	131.0W	731	31	1032.6	21 21	979.3	01 12	1012.5	730	35	07 06	190	14.3	16.4	14.1	10.9	20.3	17.7	16.4	16.6	16.4
46006	40.7N	137.7W	726	31	1033.0	22 19	960.9	01 01	1016.8	726	42	01 02	290	21.7	21.0	23.7	23.0	12.6	20.8	23.6	23.6	22.4
46010	46.2N	124.2W	145	07	1031.0	05 18	998.8	01 09	1015.3	144	28	01 19	170	7.9	7.0	12.1	17.4	20.1	17.1	9.4	10.2	14.1
46011	34.9N	120.9W	504	22	1025.2	19 20	1003.5	17 22	1014.0	492	25	15 08	290	4.5	4.8	10.2	12.7	10.4	10.5	12.1	12.5	11.2
46013	38.2N	123.3W	706	31	1027.2	19 20	1003.4	17 07	1016.0	696	32	15 07	310	6.0	7.5	11.7	14.2	12.6	11.8	9.9	15.2	12.8
46014	39.2N	124.0W	705	31	1026.2	19 20	1000.7	29 17	1014.7	693	37	01 11	170	12.0	5.3	7.5	13.5	16.0	11.1	12.4	15.0	12.9
46017	60.3N	172.3W	150	28	1040.5	24 18	977.8	05 00	1006.3	150	35	16 06	090	11.9	19.1	15.1	17.3	18.6	18.4	5.0	7.6	16.3
46019	57.2N	170.3W	234	31	1041.0	24 21	975.9	14 06	1005.0	234	32	09 18	270	17.4	16.7	21.0	17.4	16.7	15.9	18.3	14.6	17.1
46020	55.9N	168.0W	233	31	1035.5	24 21	974.7	14 15	1004.2	230	37	09 06	280	14.4	13.4	19.0	19.6	18.6	18.0	19.5	16.6	18.1
46022	40.8N	124.5W	700	31	1026.6	20 09	998.4	29 17	1014.5	692	34	01 06	170	14.1	6.7	6.6	9.2	14.8	12.3	9.2	9.2	12.0
51001	23.4N	162.3W	731	31	1024.1	06 20	1010.2	22 01	1017.7	730	33	22 00	070	15.5	18.2	18.2	10.9	7.0	3.0			17.0

MARCH 1982			WAVE HEIGHTS (METERS)				FREQUENCY OF WAVE HEIGHTS (%)							
BUOY	LAT	LONG	OBS	MAX	DY HR	MEAN	<1M	1-1.5M	2-2.5M	3-3.5M	4-5.5M	6-7.5M	8-9.5M	>9.5M
41001	34.7N	072.3W	738	6.0	06 00	1.9		47.6	37.5	8.6	5.8	0.2		
41002	32.3N	075.3W	740	5.0	08 02	1.9		54.0	33.1	11.0	1.7			
41004	32.6N	078.7W	739	4.5	07 19	1.4	7.2	62.9	25.8	3.8	0.4			
42001	25.9N	089.7W	742	4.5	28 09	1.2	22.7	61.1	9.0	6.0	0.9			
42002	26.0N	093.5W	728	4.5	26 11	1.3	10.7	73.3	9.8	4.8	1.2			
42003	26.0N	086.0W	741	5.0	29 03	1.2	26.3	55.0	17.4	4.8	1.3			
44003	40.8N	068.5W	736	5.5	08 09	1.9	3.7	50.6	26.2	12.0	7.1			
44005	42.7N	068.3W	738	4.5	27 20	1.6	17.8	41.8	25.0	13.0	2.1			
44007	43.5N	070.1W	724	3.0	05 16	0.9	49.1	42.4	8.0	0.4				
45007	42.7N	087.1W	215	3.0	27 06	1.2	36.2	35.3	27.9	0.9				
46001	56.0N	148.0W	451	6.0	13 09	3.2		12.6	23.5	37.4	21.0	5.0	0.2	
46002	42.5N	130.0W	730	8.0	01 18	2.7		10.5	26.8	31.0	24.9	6.4	0.1	
46003	52.0N	156.0W	673	11.5	12 01	4.1			25.8	26.0	31.5	9.9	5.6	1.0
46004	51.0N	136.0W	724	8.0	13 03	3.2		12.0	37.5	21.4	18.7	10.0	0.1	
46005	46.0N	131.0W	730	7.5	01 03	3.2		13.4	28.4	28.6	21.7	7.6		
46006	40.7N	137.7W	712	7.5	02 07	3.9		3.9	19.3	23.0	43.1	10.5		
46010	46.2N	124.2W	141	6.5	01 08	3.1	11.3	17.7	12.7	12.7	43.2	2.1		
46011	34.9N	120.9W	496	5.5	30 22	2.4		25.6	40.7	25.2	8.4			
46013	38.2N	123.3W	704	5.5	03 07	2.4	4.5	25.7	33.5	23.5	12.6			
46014	39.2N	124.0W	702	6.0	30 09	2.8	2.9	12.9	33.3	31.9	18.5	0.2		
46022	40.8N	124.5W	697	5.5	01 11	2.9	0.7	10.6	34.7	30.9	23.3			
51001	23.4N	162.3W	730	7.0	21 20	3.3		0.1	28.3	43.1	26.8	1.5		

MARCH 1982			TOTAL FREQUENCY OF WIND SPEEDS (%)							TOTAL FREQUENCY OF WIND DIRECTIONS (%)							
BUOY	LAT	LONG	CALM	<4KT	4-10KT	11-21KT	22-33KT	34-47KT	>47KT	N	NE	E	SE	S	SW	W	NW
41001	34.7N	072.3W		2.7	23.8	54.3	17.7	1.5		17.2	13.2	12.0	14.9	12.0	12.7	8.8	9.1
41002	32.3N	075.3W		5.0	31.1	55.2	8.5	0.1		10.4	10.3	15.6	14.5	13.2	11.1	17.9	7.0
41004	32.6N	078.7W		3.3	43.3	53.6	2.9			14.4	19.9	12.8	6.7	8.6	15.2	16.3	6.1
42001	25.9N	089.7W		2.7	36.1	54.9	6.2	0.1		8.0	12.3	24.8	41.7	9.3	1.2	0.6	2.2
42002	26.0N	093.5W		3.3	28.9	64.2	3.6			10.3	11.0	15.9	51.2	7.4	1.0	0.6	2.6
42003	26.0N	086.0W		0.9	41.4	53.9	3.8			7.9	18.1	22.3	31.2	12.6	2.1	0.9	4.9
42007	30.1N	088.9W		4.3	45.0	45.0	5.7			7.0	12.2	21.6	23.3	22.6	9.5	1.0	2.9
42008	28.7N	095.3W		0.6	36.5	52.9	10.0			9.5	17.5	19.6	38.0	10.6	0.8	0.6	3.5
42010	29.7N	093.4W	0.5	6.8	46.3	39.5	7.3			21.8	11.2	7.4	19.6	25.1	9.8	1.7	3.3
42011	29.6N	093.5W		2.1	41.3	47.6	9.0			7.0	19.3	10.6	38.8	15.9	4.5	0.9	3.0
44003	40.8N	068.5W		2.7	37.4	54.3	5.6			11.1	7.3	8.1	11.0	12.6	9.7	21.9	18.3
44005	42.7N	068.7W		5.4	27.4	44.3	22.9			9.0	7.5	8.0	11.3	18.3	11.9	18.7	15.4
44006	36.3N	075.4W		1.4	19.7	73.7	5.2			19.8	23.8	12.6	7.1	17.9	7.0	4.5	7.1
44007	43.5N	070.1W		7.1	43.9	45.4	3.6			11.9	6.5	6.3	7.2	17.4	12.1	20.6	17.8
45007	42.7N	087.1W		2.8	27.0	67.9	2.3			17.7	2.1		5.8	27.6	26.3	7.2	13.4
46002	42.5N	130.0W		4.0	24.7	62.5	8.8			15.0	8.9	12.3	4.3	3.3	11.2	21.0	24.0
46003	52.0N	156.0W		0.3	9.3	47.7	33.7	9.0		5.3	2.4	4.6	7.6	17.4	16.3	20.1	26.4
46004	51.0N	136.0W		5.1	27.3	49.5	17.9	0.1		16.7	6.0	6.7	10.1	10.0	10.6	13.2	26.8
46005	46.0N	131.0W		2.7	15.3	63.0	18.5	0.4		12.4	5.0	4.8	3.0	6.2	14.6	25.9	28.1
46006	40.7N	137.7W		0.4	10.1	31.0	53.6	5.0		13.2	17.4	4.9	11.0	3.9	1.6	21.2	26.9
46010	46.2N	124.2W		6.3	28.5	52.8	12.5			8.9	7.5	5.2	8.3	31.3	9.9	14.1	14.9
46011	34.9N	120.9W		6.1	42.5	48.6	2.8			6.7	2.1	3.9	13.0	9.6	11.7	29.8	23.2
46013	38.2N	123.3W		6.9	32.8	48.3	12.1			2.7	2.0	6.6	11.6	10.0	8.6	19.3	37.4
46014	39.2N	124.0W		8.4	35.5	41.8	13.6	0.7		16.5	5.3	6.0	6.9	18.8	11.8	11.5	23.2
46017	60.3N	172.3W		8.7	24.7	32.0	33.3	1.3		10.5	28.2	15.5	16.3	12.7	8.7	1.3	6.8
46019	57.2N	170.3W		2.1	18.4	51.3	28.2			15.0	7.4	7.6	17.4	11.3	14.9	15.6	10.9
46020	55.9N	168.0W		7.4	8.7	51.7	31.3	0.9		8.4	3.4	4.5	18.8	20.1	11.7	18.0	15.1
46022	40.8N	124.5W		10.3	37.1	40.8	11.7	0.1		25.9	7.5	2.7	12.2	24.5	13.8	6.8	6.6
51001	23.4N	162.3W		1.4	14.2	62.1	22.3			14.7	38.2	37.1	9.2	0.7	0.1		

Continued on page 175.

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